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AMERICAN

RAILROAD JOURNAL.

STEAM NAVIGATION, COMMERCE, MINING, MANUFACTURES.

HENRY V. POOR, *Editor.*

ASSISTANT EDITORS:

JAMES T. HODGE, *For Mining and Metallurgy.*
CHARLES T. JAMES, *For Manufactures and the Mechanic Arts.*
M. BUTT HEWSON, *For Civil Engineering.*

SATURDAY, SEPTEMBER 28, 1850.

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NEW-YORK:

PUBLISHED WEEKLY, BY

JOHN H. SCHULTZ & CO.

Room 12, Third Floor,

No. 136 Nassau Street.

IRON BRIDGES, BRIDGE & ROOF BOLTS, etc. STARKS & PRUYN, of Albany, New York. having at great expense establishe. a manufactory with every facility of Machinery for Manufacturing Iron Bridges, Bridge and Roof Bolts, together with all kinds of the larger sizes of Screw Bolts, Iron Railings, Steam Boilers, and every description of Wrought Iron Work, are prepared to furnish to order, on the shortest notice, any of the above branches, of the very best of American Refined Iron, and at the lowest rates.

During the past year, S. & P. nave furnished several Iron Bridges for the Erie Canal, Albany Basin, etc. —and a large amount of Railroad Bridge Bolts, all of which have given the most perfect satisfaction.

They are permitted to refer to the following gentlemen:

Charles Cook, Nelson J. Beach, Jacob Hinds,	Canal Commissioners of the State of New York.
Willard Smith, Esq.,	Engineer of the Bridges for the Albany Basin.
Messrs. Stone & Harris, Mr. Wm. Howe,	Railroad Bridge Builders, Springfield, Mass.
Mr. S. Whipple,	Engineer & Bridge Builder, Utica, N. Y.

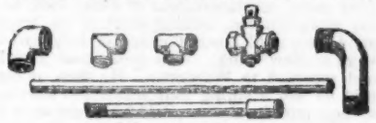
January 1, 1849.

TO RAILROAD COMPANIES AND BUILDERS OF MARINE AND LOCOMOTIVE ENGINES AND BOILERS.

PASCAL IRON WORKS.

WELDED WROUGHT IRON TUBES

From 4 inches to ½ in calibre and 2 to 12 feet long, capable of sustaining pressure from 400 to 2500 lbs. per square inch, with Stop Cocks, T's, L's, and other fixtures to suit, fitting together, with screw joints, suitable for STEAM, WATER, GAS, and for LOCOMOTIVE and other STEAM BOILER FLUES.



Manufactured and for sale by

MORRIS, TASKER & MORRIS.

Warehouse S. E. Corner of Third & Walnut Streets,

PHILADELPHIA.

Fire Brick.

THE Subscribers have constantly on hand Rafford's Stourbridge, Oak Farms Stourbridge, Lister, Wortley, Red and White Welsh Fire Bricks, common and fancy shapes. Also,

ROOFING SLATES,

from the best Welch quarries, and of all sizes. Also

COAL,

of all kinds—Liverpool Orrell and Cannel, Scotch, New Castle, Pictou, Sidney, Cumberland, Virginia, and all kinds of Anthracite coals. Also,

Pig Iron, Salt, etc., etc., for sale at the lowest market price. Apply to

SAMUEL THOMPSON & NEPHEW,
275 Pearl and 43 Gold Sts., New York.

November, 23, 1849.

Patent India Rubber Steam Packing.

THIS article, made by the subscriber, who alone is authorised to make it, is warranted to stand as high a degree of heat *as any that has been or can be made by any person*—and is the article which has made the reputation of India Rubber Steam Packing and the demand therefor. A large assortment of all thicknesses requisite for any description of engines, steam pipes, valves, etc., constantly on hand and for sale by the manufacturer and patentee, who will give every information regarding its properties, mode of use, etc. at the warehouse. JOHN GREACHEN, JR.,

98 Broadway, opposite Trinity Church.

New York, October, 1849.

To Railroad Companies, etc.

The undersigned has at last succeeded in constructing and securing by letters patent, a Spring Pad-lock which is secure, and cannot be knocked open with a stick, like other spring locks, and therefore particularly useful for locking Cars, and Swiiches, etc.

Companies that are in want of a good Pad-lock, can have open samples sent them that they may examine and judge for themselves, by sending their address to C. LIEBRICH,

46 South 8th St., Philadelphia.

November 3, 1849. 6m*

RAILROAD India-rubber Springs.

IF any Railroad Company or other party desires it, the NEW ENGLAND CAR COMPANY will furnish India-rubber Car Springs made in the form of washers, with metalic plates interposed between the layers, or in any other form in which they can be made; in all cases guaranteeing the right to use the same against any and all other pretended rights or claims whatsoever.

F. M. Ray, 98 Broadway, New York.
E. CRANE, 99 State Street, Boston.

1849.

MACHINE WORKS OF ROGERS KETCHUM & GROSVENOR, *Patterson, N. J.* The undersigned receive orders for the following articles manufactured by them of the most superior description in every particular. Their works being extensive, and the number of hands employed being large, they are enabled to execute both large and small orders with promptness and dispatch.

Railroad Work.—Locomotive Steam Engines and Tenders; Driving and other Locomotive Wheels, Axles Springs and Flange Tires; Car Wheels of Cast Iron a variety of patterns and chills; Car Wheels of Cast Iron with wrought tires; Axles of best American refined iron; springs; boxes and bolts for cars.

Cotton, Wool and Flax Machinery of all descriptions and of the most improved patterns, style and workmanship.

Mill gearing and millwright work generally, hydraulic and other presses; press screws; callenders; lathes and tools of all kinds; iron and brass castings of all descriptions.

ROGERS, KETCHUM & GROSVENOR,
Patterson, N.J. or 74 Broadway, New York.

THE NEWCASTLE MANUFACTURING Co continue to furnish at the Works, situated in the town of Newcastle, Del., Locomotive and other steam engines, Jack Screws, Wrought Iron Work and Brass and Iron Castings, of all kinds connected with Steamboats. Railroads, etc.; Mill Gearing of every description; Cast Wheels (chilled) of any pattern and size, with Axles fitted, also with wrought tires, Springs, Boxes and bolts for Cars; Driving and other wheels for Locomotives.

The works being on an extensive scale, all orders will be executed with promptness and despatch. Communications addressed to Mr. William H. Dobbs, Superintendent, will meet with immediate attention.

ANDREW C. GRAY,
President of the Newcastle Manuf. Co.

DEAN, PACKARD & MILLS,

MANUFACTURERS OF ALL KINDS OF

RAILROAD CARS,

SUCH AS

PASSENGER, FREIGHT AND CRANK CARS

— ALSO —

SNOW PLOUGHS AND ENGINE TENDERS OF VARIOUS KINDS.

CAR WHEELS and AXLES fitted and furnished at short notice; also, STEEL SPRINGS of various kinds; and

SHAFTING FOR FACTORIES.

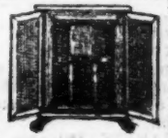
☞ *The above may be had at order at our Car Factory*

REUEL DEAN,
ELIJAH PACKARD,
ISAAC MILLS,
} SPRINGFIELD, MASS.

1y48

Iron Safes.

FIRE and Thief-proof Iron Safes, for Merchants, Banks and Jewelers use. The subscriber manufactures and has constantly on hand, a large assortment of Iron Safes, of the most approved construction, which he offers at much lower rates than any other manufacturer. These Safes are made of the strongest materials, in the best manner, and warranted entirely fire proof and free from dampness. Western merchants and the public generally are invited to call and examine them at the store of E. Corning & Co. sole agents, John Townsend, Esq., or at the manufactory.



Each safe furnished with a thief-detector lock, of the best construction.

Other makers' Safes repaired, and new Keys and Locks furnished at the shortest notice.

H. W. COVERT
cor. Steuben and Water sts. Albany

August 24, 1848.

Patent Self-clinching Railroad Spikes.

These spikes have been in use upon various roads for several years, and have met with universal approval by Engineers. They drive in the manner shown, turning themselves, and are therefore not liable to work loose. They will prove of great value to secure the chair.

We are also manufacturin railroad spikes, hook and fla head; wrought chairs, clamps, etc., of superior quality, and are prepared to contract for any pattern or weight upon favora ble terms.

SMITH & TYSON,
25 South Charles st., Baltimore Md.

P. H. Griffin,

Corner of Steuben and James Sts. Albany, N.Y.,

CONTINUES to manufaeture copper flues for locomotive boilers, brewers' coppers, stills, tanner heaters, etc. Copper work in general, at the shortest notice. He has constantly on hand brass cocks, brass valves, copper pumps of every variety.

Orders promptly attended to. 1y14

Mattewan Machine Works.

THE Mattewan Company have added to their Machine Works an extensive LOCOMOTIVE ENGINE department, and are prepared to execute orders for *Locomotive Engines* of every size and pattern—also *Tenders, Wheels, Axles*, and other railroad machinery, to which they ask the attention of those who wish such articles, before they purchase elsewhere.

STATIONARY ENGINES, BOILERS, ETC., Of any required size or pattern, arranged for driving *Cotton, Woollen, or other Mills*, can be had on favorable terms, and at short notice.

COTTON AND WOOLLEN MACHINERY, Of every description, embodying all the modern improvements, second in quality to none in this or any other country, made to order.

MILL GEARING,

Of every description, may be had at short notice, as this company has probably the most extensive assortment of patterns in this line, in any section of the country, and are constantly adding to them.

TOOLS.

Turning Lathes, Slabbing, Plaining, Cutting and *Drilling Machines*, of the most approved patterns, together with all other tools required in machine shops, may be had at the Mattewan Company's Shops, Fishkill Landing, or at 66 Beaver street, New York.

WM. B. LEONARD, *Agent.*

Gloucester Iron Works,

GLOUCESTER, NEW JERSEY,

NEARLY OPPOSITE PHILADELPHIA.

THE subscribers having made extensive alterations in their works, are now prepared to receive orders for all kinds of Stationary and Marine Engines, Boilers, Locomotives, Sugar Mills, and every description of Mill Work.

Also—Orders for Iron and Brass Castings executed with despatch.

Having secured the valuable services of Mr. David Matthew as Superintendent (who has been for five years foreman in the Iron Works of John Watchman, now the Vulcan Works, Baltimore, and for 12 years superintendent of the Mohawk and Hudson and the Utica and Schenectady Railroads, New York,) they feel confident that all orders entrusted to them will be faithfully executed.

Having an exteasive Wharf in front of their works, it will afford a safe harbor for all classes of steam vessels that may require repairs during the winter.

C. M. & J. C. SITER.

Gloucester, July 24, 1850. 1m.

NEW YORK IRON BRIDGE COMPANY.

The Bridges manufactured by this Company having been fully tested on different Railroads, by constant use for more than two years, and found to answer the full expectations of their most sanguine friends, are offered to the public with the utmost confidence as to their great utility over any other Bridge now known.

The plan of this Bridge is to use the iron so as to obtain its greatest longitudinal strength, and at the same time it is so arranged as to secure the combined principles of the *Arch, Suspension and Triangle*, all under such controlling power as causes each to act in the most perfect and secure manner, and at the same time impart its greatest strength to the whole work.

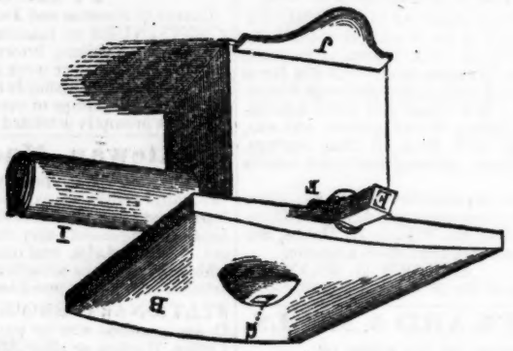
THE NEW YORK IRON BRIDGE COMPANY are prepared to furnish large quantities of Iron Bridging for Railroad or other purposes, at short notice, and at moderate prices.

Models, and pamphlets giving full descriptions of the above BRIDGE, with certificates based on actual trial from undoubted sources, will be found at the office of the Company, 39 Jauncey Court, Wall st., or of W. RIDER & BROTHERS, 19 *Nassau Street*, where terms of contract will be made known, and where orders are solicited.

M. M. WHITE,
Agent for the Company.

August 29, 1849.

E. Harris' Patent Rotary Blacksmith Tuyere.



LETTERS Patent were issued January 9, 1849, to E. HARRIS, of Springfield, for an Improved Rotary Blacksmith Tuyere. Since that time there have been some hundreds put in operation, giving satisfaction and full proof of superiority over all others.

This Tuyere is so arranged that by one movement it can be changed from the largest work to the smallest; at the same time the fire is changed in proportion, thereby making a great saving in coal. Words cannot convey the full merits of this Tuyere; nor is it deemed necessary to speak in disparagement of other Tuyeres, as every smith is capable of judging for himself, and will give merit where merit is due.

I will simply say that there has not been a single instance where I have had my Tuyere put in use but it has given full satisfaction, and is recommended by all who have used them, as being superior to any other ever introduced. I would invite all to give them a trial; and the names of those using them being given, I hope it may induce others to try them, they recommend themselves.

Western Railroad Shop,	Springfield,	Mass.
" "	Pittsfield,	"
Connecticut val."	Springfield	"
" "	N. Hampton	"
Hartford "	Hartford,	Conn.
New Haven "	New Haven	"
Norwich and Worcuster,	Norwich	"
N. York and N. Haven,	New Haven	"
Saratoga and Whitehall,	Saratoga,	N. Y.
Vermont Central,		
Hudson and Berkshire,	Hudson,	
L. Kingsley,	Canton,	Mass.
Hadley Falls Co.	Ireland, W. Springfield,	Mass.
Sidney Patch,	Boston,	"
Ames Manuf. Cor.,	Chickopee,	"
American Machine w'ks,	Springfield	"
Dean, Packard & Mills	"	"
G. Frank Bradley,	N. Haven,	Conn.
Andrew Baird,	"	"
Collis & Lawrence	"	"
Slate & Brown,	Windsor Locks,	
Gage,	Nashua,	N. H.
Machine shop,	Manchester,	"
Louis F. Lanney,	Baltimore,	Md.
J. H. Baerdid,	179 Chambers st.	N. Y.
J. Fanning	Rochester,	"
G. W. Hunt	41 Gold st.	"
Chamberlain & Waldo,		"
P. S. Burges, carriage maker,		"
Samuel Miller,		"
J. Leggett,	Steverson falls,	"
J. E. Harris,	Hillsdale,	"
John L. Graham,	Albany,	"
David Dalsell,	South Egremont,	Mass.
Roys & Wilcock,	Berlin,	Conn.

Agents for the sale of Tuyeres:

B. B. Stevens in New York and Connecticut.

A. J. VanAllen has the Agency for the Western and Southern States, and is now travelling through those States. Any communication addressed to the patentee will receive prompt attention.

E. HARRIS, Patentee,
Springfield, Mass.

November 23, 1849.

Railroad Lanterns.

COPPER and Iron Lanterns for Railroad Engines, fitted with heavy silver plated Parabolic Reflectors of the most approved construction, and Solar Argand Lamps; manufactured by

HENRY N. HOOPER & CO.,
No. 24 Commercial St. Boston.

August, 16, 1849. 6m33

Gas Fixtures.

FIXTURES for Burning Gas for Lighting Public Buildings, Private Dwellings, Stores and Factories, manufactured by the subscriber in great variety. Orders by Mail, or left at the Factory on Causeway street, will be promptly attended to.

HENRY N. HOOPER & CO.

Boston, March 23, 1850. 6m13

F. M. Ray's Patent India-rubber Car Springs.

India-rubber Springs for Railroad Cars were first introduced into use, about two years since, by the inventor. The New England Car Company, now possesses the exclusive right to use, and apply them for this purpose in the United States. It is the only concern that has tested their value by actual experiment, and in all arguments in favor of them, drawn from experience of their use, are in those cases where they have been furnished by this company. It has furnished every spring in use upon the Boston and Worcester road, and, in fact, it has furnished all the springs ever used in this country, with one or two exceptions, where they have been furnished in violation of the rights of this company; and those using them have been legally proceeded against for their use, *as will invariably be done in every case of such violation.*

The Spring formed by alternate layers of India-rubber discs and metal plates, which Mr. Fuller claims to be his invention, was invented by Mr. Ray in 1844.—In proof of which we give the deposition of Osgood Bradley, of the firm of Bradley & Rice, of Worcester, Mass., car manufacturers, and men of the highest respectability. In this deposition, in relation to the right of parties to use these springs, he says:

"I have known Mr. Ray since 1835. In the last of May or the commencement of June, 1844, he was at my establishment, making draft of car trucks. He staid there until about the first of July, and left and went to New York. Was gone some 8 or 10 days, and returned to Worcester. He then on his retnrn said he had a spring that would put iron and steel springs into the shade. Said he would show it to me in a day or two. He showed it to me some two or three days afterwards. It was a block of wood with a hole in it. In the hole he had three pieces of India-rubber, with iron washers between them, such as are used under the nuts of cars. Those were put on to a spindle running through them, which worked in the hole. The model now exhibited is similar to the one shown him by Ray. After the model had been put into a vice, witness said that he might as well make a spring of putty. Ray then said that he meant to use a different kind of rubber, and referred to the use of *Goodyear's Metallic Rubber*, and that a good spring would grow out of it." There are many other depositions to the same effect.

The history of the invention of these springs, together with these depositions, proving the priority of the invention of Mr. Ray, will be furnished to all interested at their office in New York.

This company is not confined to any particular form in the manufacture of their springs. They have applied them in various ways, and they warrant all they sell.

The above cut represents precisely the manner in which the springs were applied to the cars on the Boston and Worcester road, of which Mr. Hale, President of this road speaks, and to which Mr. Knevitt refers in his advertisement. Mr. Hale immediately corrected his mistake in the article quoted by Mr. Knevitt, as will be seen by the following from his paper of June 8, 1848. He says:

INDIA-RUBBER SPRINGS FOR RAILROAD CARS.—"In our paper yesterday, we called attention to what promises to be a very useful invention, consisting of the application of a manufacture of India-rubber to the construction of springs for railroad cars. Our object was to aid in making known to the public, what appeared to us the valuable properties of the invention, as they had been exhibited on trial, on one of the passenger cars of the Boston and Worcester railroad. As to the origin of the invention we had no particular knowledge, but we had been informed that it was the same which had been introduced in England, and which had been subsequently patented in this country; and, we were led to suppose that the manufacturers who have so successfully applied this material, in the case to which we referred had become possessed of the right to use that patent. It will be seen from the following communication, addressed to us by a member of the company, by which the Worcester railroad was supplied with the article upon which our remarks were based, that we were in an error, and that the springs here introduced are an American invention, as well as an American manufacture. How far the English invention may differ from it we have had no opportunity of judging."

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HENRY V. POOR, Editor.

ESTABLISHED 1831.

PUBLISHED WEEKLY, AT No. 136 NASSAU ST., NEW YORK, AT FIVE DOLLARS PER ANNUM IN ADVANCE.

SECOND QUARTO SERIES, VOL. VI., No. 39] SATURDAY, SEPTEMBER 28, 1850. [WHOLE No. 754, VOL. XXIII.

ASSISTANT EDITORS,

J. T. HODGE, *For Mining and Metallurgy.*

GEN. CHAS. T. JAMES, *For Manufactures and the Mechanic Arts.*

M. BUTT HEWSON, C. E., *For Civil Engineering.*

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American Railroad Journal.

PUBLISHED BY J. H. SCHULTZ & Co., 136 NASSAU ST.

Saturday, September 28, 1850.

Late Accident on the Western Railroad.

We copy below the finding of the coroner's jury held in relation to the recent accident upon this road, by which three persons lost their lives:

That the said Samuel Jone Mumford, John H. Whittemore and Jane Roeselle left Albany on the afternoon of the 9th inst., on the passenger train for Springfield, Mass., belonging to and run by the Western railroad corporation, that soon after leaving the depot at Hinsdale in said county of Berkshire, and when within about one mile of that depot, while the train was moving at the rate of about twenty-five miles an hour, the forward axle of the car in which the persons above named were seated, broke near the centre of said axle, was torn from the trucks, thereby causing the other axles of the same car to be torn from the trucks, thus letting the car down upon the track; that in this condition the car was dragged about three rods; that in the passage of the forward trucks under the car, large holes were made in the flooring, and several seats were torn up; that the above named deceased persons fell through these holes in the track and thereby received wounds and bruises which caused their instant death.

An adjournment of the said inqusition to the 17th instant was then granted for the purpose of procuring the attendance of men experienced in the manufacture of iron and car axles to examine the condition and investigate the cause of the axle breaking. Upon the testimony thus submitted said jurors do further find—

1st. That said car was constructed for the Western railroad corporation in the year 1848, by the Springfield Car and Engine Co., and that at the time of the accident the car had been running about sixteen months.

2d. That said axle was made of Salisbury iron by an experienced manufacturer whose axles at that time and since have been considered among the best in the market.

3d. That said axle was of the size ordinarily used for passenger cars, and was of sufficient size to have borne all the strain which would have come upon it in ordinary use if it had been in all respects perfectly sound.

4th. That on the morning of the day of the accident an examination of the axle and trucks of said car was made at Springfield by an agent of the Western railroad corporation, and that on the arrival of said car at Albany, said axles and trucks were again examined by an agent of said corporation, at said place, and that no defect was found or was visible at either examination.

5th. That externally said axle appeared to have been perfectly sound and without defect at the place where it broke, up to the time of the accident.

The iron on breaking appears to be of the best quality used for shafts for locomotives and cars.

6th. That if any defect did exist, the crack or flaw was so fine that it would not have been visible on the most careful and thorough examination of the agent of the corporation.

7th. That there may have been an internal defect sufficient to cause the breaking while the surface of the axle remained perfectly sound.

No body to blame here, as usual. It must be poor comfort to travellers to be told virtually, that accidents like the above are unavoidable, that they are liable to them every time they step into a railroad car. Now the report of the jury in this case is a most approved specimen of white-washing, or ignorance. Axles of a proper size do not give way from accident merely. The strength of iron to resist tension or pressure, is about as well known and settled, as the weight of a given quantity. If in a particular case, it yields under a partial test, this must be attributed to a defect in the quality of the iron, or in the make. Competent judges could undoubtedly have ascertained where the defect lay in this case, a matter which seems entirely to have baffled the skill of the jury.

There is no necessity for using an unsafe axle. A good article can always be had, about which there can be no mistake, provided railroad companies will pay a reasonable price. But companies and individuals are too much in the habit of purchasing the cheapest article. To sell at the low prices which have prevailed for some time past, many manufacturers have, without doubt, made up the loss, by making a poor article. To this is to be attributed many of the dreadful accidents which have been so frequent of late.

The only way to make railroad companies careful of the lives and safety of passengers, is to make it for their interest to be so. The severest penalties should be annexed to accidents arising from their fault. The names of all makers of imperfect or unsafe machinery should be made public; which would act as a most powerful stimulus to secure good work.

For the American Railroad Journal.

The Breaking of Rider's Iron Bridge on the New York and Erie Road.

The reading of Mr. S. Whipple's communication on the breaking of the above bridge, in the Journal of September 21st, induces me to say a few words on the same subject.

Mr. Whipple's remarks, as far as they go, are perfectly correct, in relation to the "Rider" bridge, although I believe that the weakest points in that combination are at the ends next to the abutments. The investigations of that gentleman will always command the respect of those best able to judge, he having proved himself competent to the task in all his publications on bridge building, a qualification which few bridge builders have a right to claim—most structures of wood or of iron being put up at random, or by the "rhule of thumb," the inventors and constructors very frequently not even understanding the first elements of statics, much less the application of their principles.

Considering the general want of scientific knowledge, and the great number of newly invented combinations in wood and iron, issuing daily from the Patent Office, puffed up in the journals, and rewarded by gold and silver medals by men who are totally ignorant of what they are investigating, it

is no wonder that such an appalling number of the most frightful accidents should occur, as actually have occurred on many of our railroads within the past few years. I say this is the necessary consequence of that total want of scientific knowledge on the part of those who superintend these structures.

On a new combination of wood or iron being presented to an engineer, it is his province to analise its merits, and not to rely on puffs and advertisements. He ought to be fully competent to estimate the strength of *any* bridge, and to point out its weak and its strong parts. After carefully investigating plans and the condition of similar structures already in use, he is then to provide for good materials, and see it well put together. Conscious of having duly considered all the strains to which the structure will be exposed, he will then place full confidence in its capacity and safety.

That a bridge has stood a year or two, is no proof that it will stand another year. Durability and safety can only be insured by a superabundance of strength, and that such exists the engineer should be morally certain.

When the Rider bridge on the New York and Erie railroad was put up, it was observed that its strength had long been tested on the Harlem railroad. All that could be said in favor of that plan, however, was, that none of these bridges had actually broken down as yet. It is true that this was rather more than could be said of some other plans. While the above bridge was being built, I was engaged in the construction of the Delaware Suspension Aquaduct, within three miles of the site of the former. My opinion being asked at the time by some of the parties interested, I took the liberty of expressing my unqualified disapprobation of the "Rider plan." I was further strengthened in the view I had formed, on examining the structure after its completion, when I observed that the extreme rigidity of that frail combination was *solely* produced by *tight wedging!* This is one of the weak features of the plan, and well calculated to mislead the superficial observer. It appeared to me then that many parts of the structure were in an overstrained condition, and I expected to hear of its downfall every day.

In justice to the superintending engineers then on the road, I must add that none of them appeared to approve of the plan; they were acting under orders, and of course had no business with the planning, nor can *they* be blamed for the consequences.

I would repeat here, that the weakest parts of Rider's bridge are the ends near, and on the abutments. By terminating the iron network on the abutments in strong cast iron posts, embedded in the masonry, or fastened upon the coping, securing these posts by strong anchors, run back some distance into the masonry, and running a number of stays from their tops to the chords of the span, extending the longest to near the centre, the strength of these bridges might be greatly increased and larger spans be attempted with safety. But the section of the top and bottom chords want also to be greatly enlarged, the upper one needing lateral as well as vertical strength. As it is, the main strain is thrown upon the wrought iron *bottom* chord, the cast iron top chord from its small section and very little curvature having little or no power to support. In the bridge in question some other glaring defects could be observed, as for instance the attachment of the oak beams, which support the track, to the cast iron posts, which extend vertically from the bottom to the top chords, and which were simply bolted to their sides. Rider's plan is the best combination for *stiffness*, and the most deficient for *strength*, that has come under my observation. Where stiffness alone is required in a vertical position, without any strength, this plan has great claims.

In conclusion, I would express a hope, that the civil engineers of the United States, in view of their professional standing, will in a body disapprove of the wholesale veto, which the president and directors of the New York and Erie railroad have seen fit in their wisdom to pass *indiscriminately* upon *all* iron bridges.

JOHN A. ROEBLING.

Trenton, N. J., Sept. 23, 1850.

Oxygen.

Continued from page 596.

But it was Priestley's discovery of oxygen, on the 1st of August 1774, that completed the overthrow of the phlogiston theory. He procured the gas by concentrating the sun's rays upon a quantity of the red precipitate of mercury, which was placed in a glass flask filled with, and inverted in, quicksilver. "I presently found," says he, "that by means of this lens, air was expelled from it very readily. Having got several times as much as the bulk of my materials, I admitted water to it, and found that it was not imbibed by it. But what surprised me more than I can well express, was, that a candle burned in the air with a remarkably vigorous flame, very much like that enlarged flame with which a candle burns in nitrous air exposed to iron or liver of sulphur; but as I got nothing like this remarkable appearance from any kind of air besides this particular modification of nitrous air, and I knew no nitrous acid was used in the preparation of the *mercurius calcinatus*, I was utterly at a loss how to account for it." It is scarcely possible to refer to a more simple and truthful account of a great discovery; and the spirit of the following short extract from his own prefatory remarks, coincides so well with our own views, that we cannot refrain from taking this opportunity of inserting it:—"The contents of this section will furnish a very striking illustration of the truth of a remark which I have more than once made in my philosophical writings, and which can hardly be too often repeated, as it tends greatly to encourage philosophical investigations, viz., that more is owing to what we call *chance*, that is, philosophically speaking, to the observation of *events arising from unknown causes*, than to any proper design or preconceived theory in this business. This does not appear in the writings of those who write synthetically upon these subjects, but would, I doubt not, appear very strikingly in those who are the most celebrated for their philosophical acum, did they write analytically and ingeniously."—(Exp. and Obs., vol. ii. p. 103.) The danger against which he warns us—trust in theory—was one which overcame himself. By his natural powers of observation, aided by great energy and untiring perseverance, he made discoveries that overthrew existing theories, and laid for science a solid foundation of facts; yet he himself named this newly discovered gas "dephlogisticated air," and tenaciously adhered to the title even after its properties and actions had become much better understood. Despite constantly accumulating evidence, he continued to fight under the banners of the phlogistians, and almost his last publication was a tract entitled, "The doctrine of Phlogiston established, and that of the Composition of Water refuted." He first made the cudgels, and after placing them in vigorous and unspairing hands, deliberately laid himself out for castigation. His life and character are so remarkable, and afford so many points for reflection to all would-be philosophers, that we purpose noticing his career at some length. His many brilliant discoveries, that of oxygen being only one amongst many, although it is the one with which we are at present most concerned, his contrivances for the readier prosecution of pneumatic chemistry, and many other labors of scientific research, entitle him to our very highest regards.—"To err is human," and we should merely look upon his faults as beacons for ourselves; for it will always be a subject of admiration, and an ample excuse for his defects, that amidst all the persecutions and turmoils of political and theological party controversies, he still found time for the successful pursuit of philosophical experiments; and thus removed the excuse of every one, who, in the palliation of their short-comings in the same labors, would plead the idler's refuge, "want of time."

Joseph Priestley was born at Fieldhead, near Leeds, in 1733. Educated by his aunt with a view to his assuming the functions of a Unitarian dissenting clergyman, in early life he made very considerable progress in the dead languages, Latin, Greek and Hebrew; but from failing health, he was advised to turn his thoughts to trade, and to settle at Lisbon. He therefore applied himself to the modern languages, and learned, as far as possible, French, Italian, and German, without a master. Returning strength brought with it a desire to carry out his first intention of entering the ministry, and accordingly he completed his academical studies at Daventry. He studied keenly, and from the peculiar position of the academy, freedom of discussion being allowed and encouraged to its full extent, and the two masters espousing different opinions, he became, almost necessarily, both well skilled in, and much addited to, controversial subjects, and apt in maintaining his own speculative opinions. His studies not only embraced the ordinary course relating to theology and divinity, but included mechanical philosophy and metaphysics, and some knowledge of Chaldee, Syriac, and Arabic. On leaving the academy, he became assistant in a small meeting house at Needham, from which he never received more than £30 a year.—His theological opinions drove away his hearers, and still further diminished his income. He attempted to open a school; but the odium attached to his tenets prevented his success, and at length he became indebted for the means of subsistence to the aid of charitable funds procured through Drs. Benson and Kippis. His unpopularity placed all the vacant situations in the neighborhood beyond his reach, and nearly every one treated him with contempt; but when in after years the then popular Dr. Priestley came to preach in that locality, the chapels were thronged with those who eagerly flocked to hear the same sermons which they had in former days so unequivocally and so bitterly condemned. He at length succeeded in obtaining a meeting house at Nantwich, in Cheshire, where he met with a better reception, doubtless in some measure owing to his careful avoidance of controversial subjects. He opened a school, and found it both agreeable and profitable; and he employed his leisure time in giving private lessons in the house of a neighboring and eminent attorney. He was able to procure books and a few philosophical instruments, wrote a grammar for his school, and even found time to learn to play a little on the flute.

The Warrington Academy had been founded during his stay at Needham, and on a vacancy occurring in the office of tutor in the languages, he was invited to accept it, and accordingly left Nantwich for that purpose. He there, at Warrington, wrote his "History of Electricity," which first brought him into note as an experimental philosopher, and enabled his friends to procure for him the title of Doctor of Laws from the Edinburgh university. From quarrels between various parties connected with the institution, he was induced to leave it, and, in 1767, accepted an invitation to take charge of Minhill chapel, at Leeds, where he had ample leisure to pursue his favorite studies, and produced numerous works, many of them controversial. His chemical career was likewise commenced at Leeds, and he was accidentally led to think of pneumatic chemistry by witnessing the operations at a brewery near his residence. After six years' residence in Leeds, the Earl of Shelburne, afterwards Marquis of Lansdowne, engaged him as librarian and literary companion, at a salary of £250 and a house. It was during this engagement that he made his celebrated discovery of oxygen. In company with his lordship, he visited the continent, travelling through Holland, France and Germany, and residing some time at Paris. In the course of a few years, Priestley and Lord Shelburne separated by mutual consent; and, in accordance with a previous stipulation, his lordship settled upon him an annuity of £150, which was regularly paid during the remainder of Priestley's life.

To add to his diminished income, several of his friends, headed by Dr. Fothergill, raised a subscription to enable him to carry out his experiments to their full extent. He then settled at a meeting house in Birmingham, and pursued his theological and chemical investigations with increased ardour. He completed former philosophical works, continued his periodical, "The Theological Repository," published numerous tracts in support of his peculiar opinions, and upon the history of the primitive church. At first he gained great popularity, but he unluckily ventured to attack the Established clergy of the place, and expressed his political convictions with a force and vehemance that were particularly unsuited to the troubled times of the French Revolution, and especially opposed to the avowed maxims of Mr. Pitt and his administration.

Priestley answered Mr. Burke's book on the French Revolution, and thus incurred the enmity of that extraordinary man, who, in the House of Commons, repeatedly inveighed against his character and writings with peculiar virulence. The clergy of the Church of England also leagued against him, and were joined by his political opponents, now his mortal enemies; for, educated in controversy, he was scarcely prudent in debate, and endangered the success of his cause by unspairing vehemence. This agitation soon produced its fruits. In 1791, on the day of the anniversary of the French Revolution, the populace burned down his meeting house and residence. They cast his library, manuscripts, and apparatus, into the incendiary flames. His son owed his life to the forcible restraint of a friend. The dwellings of his friends were sacked, burned and plundered, and he made his escape to London in disguise. He was invited to succeed Dr. Price at a meeting house at Hacney, but so great was the dread of his unpopularity, that no one would let him a house for fear of its destruction by the mob. And so far was this feeling carried, that, although a "Fellow," yet the members of the Royal Society drove him from their company, and compelled him to withdraw his name. Such was tne persecution of opinion in England during the last ten years of the eighteenth century! True those opinions were distasteful to the multitude, and were advocated strenuously and vehemently in the full and bitter spirit of party controversy; yet they were received with tenfold more disgraceful alarn. Fear, hatred, and malignity, all rose up in arms against him. The members of the Established Chnrch procured a bishop ic for Dr. Horsley, who, in their opinion, had completely refuted Priestley's theological arguments; yet they still feared the effect of his writings, notwithstanding the so-called victory of their well-rewarded champion.

It is always thus with religious and political ultra zeal. Most sectarions preach, few practise, universal toleration. Political differences, too, frequently lead to enmity. So also in scientific disputes. Opponents lose their tempers, special pleading succeeds to plain statements of facts, acrimony and recrimination hide all beneath a cloud of passion, and the subject of the search is buried in the dust of the debate.

Priestley eventually emigrated to America, where he was received with much respect, and established himself in Northumberland, 130 miles from Philadelphia, and gradually resumed his former pursuits, and, as an almost necessary consequence, created fresh enemies, and so lost ground in popular esteem as to be threatened with expulsion as an alien. Matters, however, did not proceed to extremities, Priestley's forbearance helping to allay the whirlwind; and he died in America, having the pleasure of finding respect for his energy and perseverance gradually on the increase during his latter years. Had he been less controversial; had his mind been less ready to defend its theoretical positions; in short, had he possessed more of the calm deliberate equity of the judge, and less of the one-sided animus of the special pleader, he would have employed his own discoveries in the cause of truth—would have laid the science of chemistry under far greater obligations than any other man could hope to do, and would have raised himself to a pinicle of fame unattained by any other philosopher. All this was hindered by his habit of argument. We cannot too often remember that our search should be truth, and that only. Victory in debate may be defeat in reality; acuteness, importunity, or tact, may silence a less able adversary, who, though unapt at rejoinder, may yet have right on his side. The habit of mere discussion, or rather of debate, led Priestley to maintain what he should have calmly considered. It was he who discovered the method and provided the tools, but left it to others to employ them, and so to speak, enrolled himself an antagonist to the children of his own brain.

Antoine Laurent Lavoisier, working but little in the quarry, became the architect of other men's labors. He may be said to be the first who systematically* applied the balance to the result of chemical experiments, and thus established a judge whose faculties are never unduly influenced. The impetus this gave to science has never been lost, but it continues to move with a constantly accelerated velocity. Lavoisier was born in Paris, in 1743, and fell a victim to the Revolution in 1794. His theories of combustion and acidification have been already referred to, and, though imperfect, they will always redound to his honor. He unfortunately proclaimed himself the discoverer of oxygen, and thus laid himself open to deserved animadversion. Priestley, while at Paris, mentioned his discovery at a philosophical meeting at Lavoisier's table; and mentions this circumstance in his last publication, and so corroberates his assertion by various facts, that we can only lament that so eminent a man as Lavoisier should have descended to such meanness.

Lavoisier's theory, or "the French Chemistry," as it was called in claptrap patriotism, by Fourcroy, born in Paris, 1755, died 1809, has been so often unduly praised, that while we admit our debt to Lavoisier for his eminent ability in logical induction from facts ascertained by others, and for his skilful reviews and dissection of hypothesis, we cannot refrain from quoting the following paragraph from Brande, and with it shall close our present essay:—

"The prominent features of the French theory are its explanation of the phenomena of combustion and acidification, the presence of oxygen being essential in both cases. That air is the food of fire was known in the remotest ages; and that it causes the increase of weight sustained by metals during their fusion and calcination, was shown by Rey early in the seventeenth century; that a part only of the atmosphere is concerned in the support of flame, was explained by Hook in 1667; and that the vital or igneous spirit, as he terms it, of the atmosphere, is concerned in the formation of acids, was asserted by Mayow in 1674. Here, without advancing into the eighteenth century, we have, in explicit detail, all the facts and arguments necessary for the construction of the French theory; but if to these we add the discovey of oxygen by Priestley, and of the composition of water by Cavendish and Watt, what then becomes of its claim to originality?" D.

From the Journal of the Franklin Institute.

INVESTIGATION OF THE COMPARATIVE MERITS OF THE PERPENDICULAR AND RADICAL PADDLE WHEELS FOR SEA-GOING VESSELS. By B. F. Isherwood, Esq., Chief Engineer U. S. Navy.

The perpendicular (sometimes called vibrating) paddle wheel whose paddles enter and leave the water perpendicularly, has never been introduced into this country, though extensively used in England and France, both in government and private steamers. The object of this arrangement of the paddles is to avoid the loss of labor by the oblique action of the common radiating paddle wheel.—While, however, effecting this object, which is done by the combined movement of an eccentric and a number of jointed levers, it causes another loss of labor from the frictions of the eccentric strap, and the joints of the levers, and this friction amounts to a very considerable per centage, as will readily be appreciated when it is considered that action and reaction being equal, there is sustained by the acting paddles of a paddle wheel the same pressure that is sustained by the steam piston of the engine, which same pressure is sustained also by the various journals transmitting the power of the steam piston to the vessel. The mean of many experiments made to ascertain the friction of metal on metals with lubrication, has been found to be about ten per cent. of the pressure. But in the case of the steam engine, the pressure is not a *statical* but is a *dynamical* one; that is, it is composed of pressure and the velocity at which the pressure moves; but this product expresses also the power of the engine, wherefore, the friction of the load, that is, of the reaction of the vessel on the journals transmitting the power of the steam piston to the vessel, is one tenth of the power; and, as before stated, action and reaction being equal, the acting paddles sustain this same pressure, and in the perpendicular paddle wheel they turn under this same pressure; wherefore the friction will be as before, one tenth of this pressure; that is, one tenth of the total power developed by the engine. That this is correct will be demonstrated from the experimental data hereafter examined. Now, the losses of labor by the common paddle are slip and oblique action, and as has already been stated, the losses of labor by the perpendicular paddle wheel are slip, and the friction of its moving parts, in addition to which there is a further serious loss by reaction when the horizontal speed of the entering perpendicular paddle is less than the velocity of the vessel, as will be explained hereafter. But slip being entirely dependent upon surface of paddle, it is evident that whatever slip can be given to one wheel can be given to the other, using the proper quantity of paddle surface for that purpose. The comparison is then narrowed down between the loss by oblique action of the radiating paddle wheel, and by friction of its moving parts and reaction of the perpendicular paddle wheel. The loss of labor by the friction of the paddle surface on the water, and by the direct resistance of the paddle edges, may be considered as equal in the two wheels; and is, moreover, too small an absolute quantity to be considered in a general calculation.

The best arrangement of paddle surface for the common radiating paddle wheel, is evidently to make it as long and as narrow as possible, and to make the dip edge of the paddle coincide with the surface of the water. This arrangement for minimum narrowness reduces the slip to the minimum for a given amount of surface, because the slip must be calculated for the centre of pressure or reaction of the paddle; and it is obvious that the nearer the centre of reaction approaches the outer or lower edge of the paddle, the less will be the displacement or slip; for even if the centre of reaction have no slip, that part of the paddle surface comprised between it and the outer edge of the paddle will operate a displacement.

Making the top edge of the paddle to coincide with the surface of the water, gives the minimum of loss by oblique action; for the less the immersion of the paddle proportionally to the diameter of the wheel, the less will be the vertical composant of the power; because the sign of the angle under which the paddle presses the water vertically will be less.

But in practice these arrangements are wholly unattainable. In the first place, the length of paddle is restricted by practical considerations; any increase beyond a certain point is accompanied by such decreased strength in the guards, and increased weight in the wheel, as well as by the inconvenience of an excessively broad vessel, (over the guards) that the paddles of the largest sea going vessels rarely exceed eleven feet in length. The careening of the vessel also operates a depression of the leeward paddles and a raising of the weather paddle, and, taking the centre of the ship for the centre of oscillation, (not strictly true) it is evident that this depression and rise is in proportion to the distance between the exterior ends of the paddles of the opposite wheels.

This variation from a horizontal line is injurious to the economical performance of the wheels, with whose normal action it seriously interferes.—The length being thus determined, and a certain area of paddle being required to propel with the desired slip, that area must be given by breadth of paddle, which has the two fold disadvantage of requiring deeper immersion to cover the paddle, thereby increasing the loss by oblique action, and

* Its application was first suggested by Bergmann, who was born in Sweden, in 1735, and died 1784.

of raising the centre of reaction, thereby increasing the slip. It is moreover wholly impossible to make the top edge of the paddle coincide with the water surface, from the varying draughts of water of the steamer from the moment of starting, caused by the consumption of fuel; and from the careening of the vessel, which would, with such an arrangement, lift the weather paddle partly or wholly out of water. It may be taken as a mean with sea going vessels of medium size, supplied for a voyage of nine days and over, that the variation of draught by reduction of fuel is about three feet; to this must be added 1½ foot for careening of the vessel, and 2½ feet for depth of paddle, and we have for the least

$$\text{mean immersion } \frac{(1\frac{1}{2}+3+2\frac{1}{2})+(2\frac{1}{2}+1\frac{1}{2})}{2}=5\frac{1}{2} \text{ feet.}$$

Such a proportion of paddle placed on the circumference of a circle of 28 feet diameter, the paddles being about 3½ feet apart, would propel a vessel of 2600 tons displacement and 590 square feet immersed section, with a slip of about 18 per cent., and a loss by oblique action of about 18½ per cent. This loss by oblique action becoming of course less with vessels making shorter voyages, and having proportionally less variations of draught; and also with vessels having wheels of larger diameter, the *absolute* immersion remaining the same. We are again, however, met by difficulties in increasing the diameter of the wheel; in the first place it requires engines of longer stroke in order to avoid the too great friction caused by the leverage of the centre of reaction of the paddle on the crank pin: and in the second place, the resistance of the wheel houses to the air, the weight of the wheels, housing, etc., are serious disadvantages. In attempting, then, by means of better theoretical proportions for the radial paddle wheel than those now used in practice, to avoid certain losses, we encounter other losses and inconveniences, offsetting or exceeding the gain. It may therefore be considered as settled, that with the ordinary radiating paddle wheel in sea going vessels of medium size, making voyages of nine days and over, that the loss of labor by slip cannot advantageously be reduced below 20 per cent., nor the loss by oblique action below 18 per cent., making a total of 38 per cent. It is true, however, that the resistance of the water to displacement is greater at greater depths in the proportion of the depths. The greater therefore the immersion of a given paddle, the less will be its slip, but each increase of immersion increases the loss by oblique action, and a point is soon reached where the increased loss by the latter exceeds the increased gain by the former. To push the immersion farther than this is evidently to sustain a greater total loss.

To be continued.

English Iron Market by the last Steamer.

Liverpool.—Our market for Scotch pig iron is rather inactive, and the quotations for mixed numbers is 43s.; Gartsherrie No. 1, 44s. Sales have been made at 3d less. Bars in Wales at £4 12s. 6d, with few transactions.

Birmingham.—No further improvement has taken place here during the past fortnight; indeed, within the last few days the iron market, both at this town and at Wolverhampton, has been rather flat than otherwise. The accounts from London also are of a very quiet character, but from Glasgow, Manchester and Liverpool they are rather more promising; at the latter the minimum prices at which orders can now be placed are considerably in advance of those at which late contracts were delivered. We find upon the most accurate inquiry that throughout the whole of our great iron producing districts, scarcely any of the mills and forges are working to more than half their capabilities, and by far the greater portion not to the extent, while some are altogether closed; and yet it is considered that in manufactured iron the make is scarcely reduced within the demand, particularly as the export trade, after the late activity, begins again to show symptoms of repletion. In pig iron but little has been doing. The most needy sellers relieved themselves during the late slight impulse, which has, however, proved of short duration.—Manufactures generally have now made their purchases, and those who might be inclined to speculate seem not to have sufficient confidence to consent to the figure required. It is a question that is very generally forcing itself upon the attention of thinking men interested in the trade, why it should be the case that with every prospect of an abundant harvest, with an export trade of the most expansive dimensions, with money abounding and discounts unusually low, with commercial facilities and circumstances the most advantageous, and with an appearance at least of prosperity of almost every other trade, that of iron alone should remain in a condition so utterly lifeless and unremunerative.—The discussion of this question would exceed the limits and intentions of these articles, but its consideration might afford profitable employment for some of the time and talents of those to whose guidance the trade is accustomed to look in periods of difficulty. If the cause of this anomalous prostration could be clearly discovered and defined, surely some suitable and adequate remedy could be devised. At present a large and most important interest seems to be in jeopardy from some unknown or unacknowledged cause, and the whole of the mining operations and other engagements of the district are suffering from its depression.—*Birmingham Gazette.*

Brtiish Association for the Advancement of Science.

On the Value of the Gaseous Escape from the Blast Furnaces at the Ystalfera Iron Works.

Mr. Budd stated that, since the meeting of the Association at Swansea, he had continued, and with increased success, to apply the waste gases that had escaped from the top of blast furnaces, to the manufacture of iron; and it was the result of his further experience applied to the whole of his furnaces (nine in number) since that period, that he now wished to submit to the Section. Mr. Budd then referred to his mode of applying the gaseous escape, and said it was well known that there were two descriptions of furnaces used for metallurgic purposes. The one was the blast furnace, into which air was injected, by mechanical means, at a great density, so as to penetrate upwards of 40 feet of dense materials: and the other was the reverberatory furnace, where the fire was produced by means of the draught of a chimney stack. What he had accomplished was by combining these two, so that the gaseous products of the furnace, instead of escaping through the tunnel head, were drawn sideways by a high stack, and passing through the stoves and boilers, leave behind the necessary temperature of the blast and of the steam. In a blast furnace the ores are smelted before the tuyeres by the conversion of the solid carbon into carbonic acid, which, passing up through the middle region of the furnace into a bath of carbon, was reconverted into carbonic oxide, capable of combining with a further dose of oxygen. It would be thus seen that the whole of the carbon of the fuel should be present at the top of the furnace in a gaseous form.

When the British Association met at Swansea, he had not used the gaseous escape at any great distance from the furnace, his stoves and boilers being very closely contiguous. Further experience, however, had proved that, by the aid of a stack at the end of the chain of sufficient dimensions, the gaseous escape from the furnace might be made to travel in the most tortuous directions, descending to the stoves built for heating by the usual fireplaces, and traversing the boilers; the only condition absolutely necessary being, that there should be an unbroken communication with the high stack at the end, into which the gaseous escape might at last pass, and by which it was drawn forward, instead of passing off wastefully at the tunnel head. When, however, the draft was carried downward, and to long distances, he had found it necessary to drop into the top of the furnace a hopper or funnel, made of sheet iron, which acted as a shield at the mouths of the horizontal flues, and prevented them from either being affected by high winds, or from being chocked up by materials thrown into the furnace. The reason, no doubt, why this funnel was not applied before, was the great apparent temperature at the funnel head. In practice, however, it was found that, until the gaseous escape mingled with the atmosphere, its heating power was not such as to injure sheet iron, or even to make it red hot. In fact, so long as there was an escape upwards, the iron funnel would not be injured. The damage arose during and after stoppages of the furnace, when the blast was obstructed in its passage upwards by the settlement of the materials in the furnace, so that the atmosphere rushed down to meet the ascending gases, and, of course, caused a very high local temperature. His practice was to exclude the atmospheric air as much as possible. The affinity of the gases for oxygen was so great, that the air leakage raised the temperature quite sufficient for safety, while the full combustion of the gaseous escape would melt down the bricks in the flues, and destroy the texture of the iron tube. It was not possible for him to say what combinations took place at high temperatures, where carbonic oxyde, carbonic acid, hydrogen, and nitrogen, were mixed in such proportions. At any rate, he found a smothered combustion to be the most suitable and economical for the purposes in view. He was happy to say, that at length the application of the gaseous escape had been tried in Scotland; and that at Dundyvan and elsewhere it was now in successful operation. The peculiar quality of the furnace coal of Scotland being what was called in South Wales "free burning," which, when put into the furnace raw, coked sufficiently in its descent, gave out an enormous escape, so much so that, upon a rough estimate, he calculated that the waste from one furnace in Scotland was sufficient to heat the blast, and to raise the steam for three. With anthracite coal, the minimum effect was obtained, as it was a dense fuel of nearly 95 per cent. of solid carbon; but in Scotland there would be an enormous surplus at the tunnel head. He observed that the saving at the Dundyvan Iron Works was stated to be about 1¼ ton for each ton of iron produced. Supposing, therefore, 600,000 tons of iron to be the produce of Scotland, and supposing the value of the coal used to be 3s. a ton, the saving that would thus be effected on the make of Scotland would amount to £112,500 a year; to which might be added £20,000 a year of saving in wages and repairs, which would make a total saving of £132,500, or about 4s. 5d. a ton on the produce of Scotland, which, on the present price of 44s. per ton, was about 10 per cent on the value. If the gaseous escape could be extended to the uses of the forge, a further saving of three tons of coal would be effected—thus making, at least, a saving of 20s. a ton on all the iron manufactured into bars, sheets and rails.—*Practical Mechanic's Journal.*

Alabama Minerals.

As some evidence of the vast undeveloped mineral wealth existing in the region traversed by the line of the Alabama and Tennessee river railroad, the Montgomery Atlas publishes the following list of specimens collected by Mr. J. P. Parham, while passing through the country on business connected with the road. These specimens are designed for the Central Masonic Institute at Selma. They are as follows

Marble.—Sixteen varieties, among them rare black, white and blue; black with white stripes; white with black and blue stripes; white with pink cloud; dove colored; a beautiful shell marble; magnesian marble, and a great many variegated kinds, including every shade and color.

Stone.—Soap, grind and whetstone, hone and granite. Also, two specimens of lithographic stone, one from Benton and the other from Talladega.—This is a rare and valuable stone, found only in Germany, we believe, until the discovery of these quarries.

Manganese.—Several specimens. This mineral enters largely into the manufacture of flint glass. It is also used in bleaching linen and cotton goods preparatory to printing. It is considered indispensable to many branches of the arts and manufactures, When pulverized and made into a paste with linseed oil, it spontaneously inflames. It is worth about $40 per ton, and is said to be abundant.

Iron Ores.—Dye-iron, pipe, needle, fossil, and magnetic ore; a great many specimens of the brown hematite, which yield a greater quantity of metallic iron than any other. It is soft and tough, and the most valuable for boiler plates, and all other kinds of sheet and rolled iron.

Galena.—Three specimens of Galena or lead ore. One from Bibb, one from Benton, and one from Marshall. These mines are said to be inexhaustible. The ore is certainly very rich.

Mr. P. had some other gatherings which he thinks of more importance to the curious than they are to the commercial interests of the state. Alabama certainly possesses mineral treasures enough to amuse, instruct, and profit every citizen of her wide domain.

State Debt of Pennsylvania.

The following statement shows the state and amount of the various loans to the State, and which now constitute its endebtedness, as furnished by the Auditor General of the State.

Loan per act of	April	2,	1821	$626,951 89
"	April	1,	1821	295,461 15
"	April	9,	1827	999,311 15
"	Mar.	24,	1828	1,998,407 09
"	Dec.	18,	1828	798,474 64
"	April	22,	1829	2,197,849 55
"	Dec.	7,	1829	50,000 00
"	Mar.	13.	1830	2,993,395 47
"	Mar.	30,	1831	209,096 48
"	Mar.	30,	1832	2,348,777 64
"	April	15,	1832	300,000 09
"	Feb.	16,	1833	2,540,010 56
"	Mar.	1,	1833	200,000 00
"	Mar.	27,	1839	525,922 74
"	April	9,	1833	120,000 00
"	April	5,	1834	2,265,059 75
"	April	13,	1835	959,540 79
"	Jan.	26,	1839	1,195,927 92
"	Feb.	9,	1839	1,278,375 99
"	Mar.	16,	1839	100,000 00
"	Mar.	27,	1839	469,679 22
"	June	7,	1839	40,998 25
"	June	27,	1839	1,134,332 70
"	July	19,	1839	2,053,933 42
"	Jan.	23,	1840	860,073 13
"	April	3,	1840	860,680 89
"	June	11,	1840	1,039,583 65
"	Jan.	16,	1841	800,000 00
"	Mar.	4,	1841	22,339 06
Loan (relief,)	May	4,	1841	752,664 00
Stock loan,	May	5,	1841	565,875 95
"	May	6,	1841	903,048 20
Int. certificates,	July	27,	1842	44,681 60
"	Mar.	7,	1843	83 496 54
Stock loan,	April	29,	1844	59,551 46
Int. certificates,	May	21,	1844	82,611 38
Stock loan,	April	16,	1845	4,489,463 79
"	Jan.	22,	1847	62,500 00
"	April	11,	1848	135,214 00
Total amount of loans				$40,366,803 75

Railroad for Sale.

The trustees, under an act of the Pennsylvania Legislature authorising the sale of the Franklin railroad, advertise at public sale so much of the road as lies in that state, a distance of 15 miles—the sale to take place in Chambersburg on the 25th of October next.

Growth of Milwaukee.

The census of Milwaukee shows a population of 20,035, a gain of 6,000 in a little over two years. The Sentinel thus exults, and with good reason:

Looking back a few years, the growth of Milwaukee appears almost fabulous. In 1836, only *sixteen* years ago, Solomon Juneau was the sole white male inhabitant of the town. In the Spring of that year, the first frame building was put up here. Even in 1840, but *ten* years ago, Milwaukee could only number about seventeen hundred inhabitants. and now she has over *Twenty Thousand.* Is there a city in the United States of which the same can be said?

As the best illustration of the rapid growth of our city, we give the returns of the different enumeratious from the start up to June of this year:

Year.	*Population of Milwaukee.*
1834	1
1840	1700
1842	2900
1846, June	9508
1847, Dec	14061
1850, June	20035

From the Glasgow Practical Mechanics' Journal.

Improvements in Forging Iron.

BY JAMES NASMYTH, ESQ.

[The importance of this paper, in connection with workshop practice, is, we presume, sufficient to render unnecessary any apology for giving it a more prominent position than it would occupy in our usual report of the proceedings of the British Association.—*Ed. P. M. Journal.*]

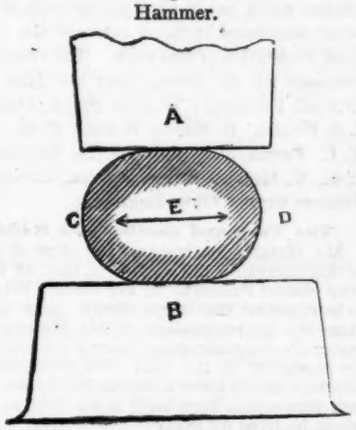
Before proceeding to describe the nature of these improvements, Mr. Nasmyth made some remarks on the value and importance of any contrivance which tended to increase the certainty of the production of sound and perfectly solid forgings of wrought iron, more especially those massive forgings required for such purposes as paddle shafts for marine engines, crank and plain axles for locomotive engines, anchors, and such like, on the soundness of which both life and property, to a vast amount, may depend, and instanced several cases in which paddle shafts of marine engines had given way, although, in the first instance, they had all the *outward* aspect of the most perfect soundness. On fracture, however, they exhibited the existence of original defect, in being little else internally than a mass or bundle of loose bars of iron which had never been in a sound welded union, but had only been held together by the exterior, where alone the welding had been so far perfect.

The chief cause of such defects was traced to the action induced on the central part of the metal, by the action of hammering such cylindrical forms between two flat surfaces, as in the case of a forge hammer and anvil of the ordinary construction.

Mr. Nasmyth exhibited the diagram, fig. 1, in

Fig. 1.

Hammer.

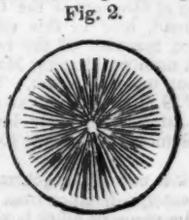


Anvil.

order to illustrate the action induced on the central portion of a cylindrical forging, when produced under the action of a flat-faced hammer and anvil.

It will be seen at once, that the effect of the successive blows of a flat-faced hammer and anvil, as A and B, is to cause the work to spread out or extend in the direction, E D, E C, as presented by the double pointed arrow in the figure; and as the flattened-out form has to be attempted to be corrected by turning the shaft round and round on the anvil, so that each successive blow may be made to correct the spreading out caused by the previous blow, the result of this action is a fretting or mincing of the central part of the metal of the shaft, resulting in a separation of the metal throughout the entire central portion of the shaft, somewhat after the manner indicated in fig. 2, frequently to such

Fig. 2.



an extent as to permit the passage of air or water from end to end of shafts forged in this manner.

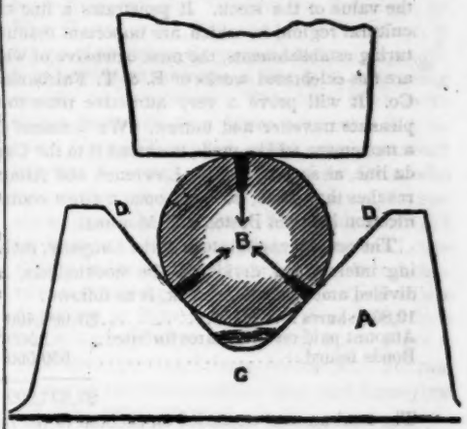
The effect of this kind of unsoundness is, that it is certain, sooner or later, to work out towards the exterior, and, in all probability, results in "a break down," more or less disastrous in its consequences.

Mr. Nasmyth then proceeded to describe his improved form of anvil-face, by the employment of which all such defects as detailed above are avoided. Such has been the perfect success and excellent results which have attended the use of this anvil-face, that its adoption has become almost universal, and the production of absolutely sound, solid, wrought iron shafts, of whatever magnitude, rendered equally easy and certain.

A, fig. 3, represents the form of the anvil-face,

Fig. 3.

Hammer.



Anvil.

which he terms a V anvil, and between the jaws of which the work to be hammered is placed, as indicated by a cylindrical shaft, seen in section, marked B. A glance at fig. 3 will no doubt render its action evident, namely, that the action of each blow of the hammer on the work, C, instead of causing, as in the case of fig. 1, a diverging action on the central portion of the work, occasions, on the contrary, a converging action, as presented by the three arrows; and instead of having the central portion of the metal of the shaft rendered less compact and solid by the action of the blows of the hammer, we have quite the contrary effect. Besides this, owing to the wedge-like form and action of this V anvil-face, the compressing effect of the blow is most importantly enhanced, and the ease and rapidity with which shafts and the like can be produced by such means is most remarkable, so much so as to enable the forgeman to hammer out, *at one heat*, by means of this V anvil, as much as would require three heats on the common flat-face anvil. The fork-like form of the V anvil affords vast convenience in keeping the work at all times right under the centre of the hammer, as it is turned round and round to receive the successive blows, which, in the case of work of the largest class, is a matter of no small trouble. Another advantage consists in the free passage, or exit, which is at all times preserved for the escape of the scales and impurities falling from the hot iron during the process of hammering, and which scales fall down towards the apex of the V at C, and trickle away, thus removing the cause of blemish and roughness, caused by such scales collecting on the face of the flat anvil, and getting beaten into the surface of the forging.

It will be seen on inspecting fig. 3, that one such V anvil-face will accommodate a vast range of diameters of work; namely, all diameters such as will neither absolutely rest on the bottom of the apex, C, or on the corners, D D.

The inventor stated that an angle of 80 degrees was found by him to be most generally suitable for the inclination of the sides of the V, and also that the edges should be well rounded off, and the surface of the V sides curved in the direction of the axis of the work to the extent of $\frac{1}{4}$th of an inch in 12 inches, to facilitate the extension—axis ways—of the work.

[To be continued.

Vermont.

Connecticut and Passumpsic Railroad.—Rapid progress is now being made towards the completion of that part of the line of this road from Wells river to St. Johnsbury; and it is expected that it will be opened for travel in November next. The whole length of line then completed will be sixty miles.

The means for the extension were obtained on the bonds of the company, which were voted at the annual meeting in 1849, to the amount of $550,000. These have been negotiated at par. The estimated cost of the division in progress, 20 miles, is 500,000 dollars. It is believed that the extension will add largely to the business of the road, and improve the value of the stock. It penetrates a fine agricultural region, in which are important manufacturing establishments, the most extensive of which are the celebrated works of E. & T. Fairbanks & Co. It will prove a very attractive route to the pleasure traveller and tourest. We presume that a movement will be made to extend it to the Canada line, as soon as the St. Lawrence and Atlantic reaches that point; so as to open a direct communication between Boston and Montreal.

The present capital stock of the company, including interest and dividends due stockholders, and divided among them in stock, is as follows:

10,864 shares	$1,086,400 00
Amount paid on 127 shares forfeited.	1,509 22
Bonds issued	550,000 00
	$1,637,909 22
The total amount expended on account of the road has been	$1,323,039 24
The receipts for the year ending May 31st, 1850, were	$113,957 33
Expenses during the same time	50,930 38
Leaving as net earnings	$62, 026 95

The above has been one of the best managed and most fortunate of the interior New England railroads. The company at no time have lost the control of their own affairs by going beyond their means. It has retained the confidence of the public, and this has enabled them to negotiate their securities on the most favorable terms. It occupies one of the best railroad routes in New England, the valley of the Connecticut, and there appears to be no doubt felt of its being able to pay a dividend of at least six per cent. annually to its stockholders.

South Carolina.

Greenville and Columbia Railroad.—We have received the third annual report of the proceedings of the stockholders of this company at a meeting held at Newbury on the 10th of July last. The line of this road extends from Columbia via Newbury and Anderson to Greenville, and including a branch to Abbeville is 164¼ miles long. The whole cost of the road and equipment is estimated at $1,384,876 74. The whole amount of means provided for its construction is $1,178,000, leaving only about $200,000 yet to be obtained. The iron for nearly the whole road has been secured; in part by a contract with the South Carolina railroad for iron formerly used by that company, sufficient to lay 100 miles, and by purchase in England for 54 miles. It is expected that the portion of the line extending from Columbia to Newbury will be completed by the first of November next. Twenty-four miles, from Columbia to the crossing of Broad river are already in operation, and contracts for grading the whole line have been made. This part of the road will be completed probably before the superstructure can be had on the ground, as a large part of it will have to be transported for a long distance for some portions of the line. All the usual necessary steps, such as providing suitable depot grounds, etc., for the use of the road, have been taken, and the company are now actively and unitedly engaged in the vigorous prosecution of this great work, with sufficient means for its early completion.

The completion of this work will carry railroad accommodations to the extreme parts of the State. Companies have been organised for the purpose of constructing branches from Laurens, and from Spartansburg and Union, to connect with the above near Newbury. The completion of these lines, with other projects in progress in other parts of the State, will give to South Carolina advantages of transportation scarcely excelled by any State in the Union, certainly by no Southern State. Every part of her wide and fertile territory will have easy access to a market at all times, and all her means of wealth will at once be brought into notice and use. Those engaged in the construction of her public works fully appreciate their importance in increasing the value of property, and improving the condition of the whole community, and they enjoy a double reward of their labors, in the consciousness of conferring a substantial advantage upon their neighbors as well as themselves. Where a railroad is regarded in the light of a public benefit, those entrusted with it are sure to labor with a zeal and disinterestedness which we never witness in a project which has in view private ends alone. The spirit manifested by the directors of this road is a good illustration of this truth. The officers of the company for the present year are Hon. John B. O'Neall, President; William Patton, Danl. Blake, J. S. Preston, D. Nance, S. Fair, F. G. Thomas, T. C. Perrin, Joel Smith, J. N. Whitner, J. P. Reid, V. McBee, Josiah Kilgore, directors; W. Spencer Brown, Chief Engineer.

The York and Cumberland Railroad.

Mr. Hambly has resigned the office of president of this company, and Eli Lewis, Esq., of York, has been elected President in his stead. Whilst it is to be regretted that there should have been any cause for the resignation of Mr. Hambly, it is a matter for congratulation, among all concerned in the prosperity of the road, that the choice of the directors should have fallen on Mr. Lewis. He is well kdown to a large body of our citizens, among whom he lived for many years, having for a long time been associated in the editorial department of this paper, previous to 1841, when he accepted the office of Treasurer in the Post Office of this city.—He subsequently removed to York, where he has been residing ever since. On the organization of the York and Cumberland railroad, he was elected treasurer of the company, and now has been chosen president of it. Integrity, high ability, and persevering industry, have ever distinguished him in every station he has filled, and these will be sure to make his administration of the road eminently successful and satisfactory to the public.

The road is now nearly completed, and the cars will be run over it in a few weeks.—*Baltimore Patriot.*

Pennsylvania.

Ohio and Pennsylvania Railroad.—At a meeting of the board of directors of the Ohio and Pennsylvania railroad, held in this city, last week, the grading and masonry of the remaining sections, nineteen in number, between Massilon and Wooster, were put under contract. The work on this distance of 19 miles is generally light, and it has been let at rates considerably lower than the estimate of Solomon W. Roberts, Esq., the Chief Engineer.

The work is now under contract in a continuous line to Wooster, a distance from Pittsburgh of 132 miles; and a vigorous effort is about to be made in Ohio, to raise the amount of stock yet required to complete the grading and bridging from Wooster to the western terminus of the road at Crestline, near Galion. The distance is fifty-three miles through a very favorable country, requiring no heavy work, on a line with light grades and curvatures, having a maximum grade of about twenty five feet per mile.

The line lies in the counties of Wayne, Holmes, Ashland, and Richland. Persons living on and near the line have already subscribed about half the amount required, and the citizens of those counties are about to be appealed to for the sum remaining to be taken, being about one hundred and thirty thousand dollars. As soon as they do this, it is the intention of the board to put the whole work under contract, and to complete it next season ready for the rails, so that our western railroad may be finished as soon as the central road.—*Pittsburg Gazette.*

Railroad Projects.

An association has been formed to construct a railroad from Gallipolis to Chillicothe. The last Ohio Legislature passed an act of incorporation to that effect. The road is intended to connect with a railroad through western Virginia to tap the Ohio at the mouth of the Kanawha, which it is believed will ere long be constructed. This would give a continuous railroad from Chillicothe east. When we take in connection with these projects a railroad from Lexington to Maysville, we have when these roads are completed, a continuous railroad communication between this and the eastern cities, excepting about 6 miles, from Chillicothe to Maysville.

While upon this subject we may state that the city council of Lexington has unanimously expressed itself in favor of the Maysville and Lexington road, and as soon as the estimates are completed that body will authorize a vote of the citizens to be taken, in accordance with an act passed by the late Legislature, on the question of subscribing $150,000 by the city for the road.—*Louisville Journal.*

Railroad Law.

In the proceedings for an injunction against the Hudson River Railroad by Hamilton Wilkes on the ground that in assessing damages for lands taken, the company had proceeded under their charter instead of under the General Railroad act.

Judge Edwards has decided that the charter called for three commissioners, whose residence and the mode of nomination were not fixed. The general act for five, who should reside in the country where the lands lie, two from the nominations of the land holders, a like humber from the nomination of the company, and the fifth by the court.

The court held, delivering an able opinion, that the mode of fixing the damages provided by the charter, stood uneffected by the General Act.

The injunction having been denied, the company will of course proceed with the construction of the road over the lands acquired under these proceedings from Mr. Wilkes, without further interruption. The same order was also made in the case of Mrs. Margaret Livingston.

New York.

Harlem Railroad.—The New York Tribune states that a contract has been made for the extension of this road to the Western road with Messrs. Geo. L. Schuyler, Sidney G. Miller of New York, and Governeur Morris of Morrisiana, who agree to complete the road for two millions of dollars, which they are to receive in certificates bearing 7 per cent. interest. These certificates are a lien upon the new portion of the road, and upon that only, and have no claims upon the earnings of the old road for interest. The Harlem company is to run its equipage over the new road when completed,

the expenses of such working to be paid from the receipts of the new road. The surplus earnings of the new road after deducting expenses, are to be devoted to the payment of the interest on the two millions of certificates issued as above. Should this surplus be insufficient for the payment of such interest, then the receipts from the old road, from the business derived from the new road, are to be refunded to the extent of three-fourths, for the purpose of making up such deficiency. Twenty-two miles of the new road are to be completed by the 4th of July, 1851, and the remainder to Chatham, by the 4th day of July, 1852. One million of the certificates are convertible into stock of the Harlem railroad company at par, any time within five years of the completion of the connection with the Western road. The agreement also provides for the sale of the new portion of the road in case the interest on the certificates is in arrears for two years, or in case the certificates are not paid off at the end of twenty years. The arrangement is a very favorable one for the Harlem road, and is in effect that it obtains a connection with the whole web of northern roads, from which to draw business without being required to provide any funds to make such connection, or to become liable for any interest in the cost of such extension, and it has the privilege at the end of taking the entire road at cost.

The Whitehall and Rutland road is completed and an engine will run over the road on Tuesday next to Castleton, a few miles from Rutland, which is the terminus of the Whitehall and Rutland charter. The link between Castleton and Rutland is being built by the Rutland and Troy company, and will be completed in about a fortnight, when New York will have a direct and rapid connection with Rutland.

The Dunkirk Journal says: The work on this end of the western division of the New York and Erie railroad, is rapidly progressing. From this place east, several miles of iron are already laid, and the superstructure of about ten miles more will be ready for the iron during this fall.

Buffalo and State-line Railroad.—The Fredonia Censor states that the whole line of the Buffalo and State-line railroad is under contract—from Buffalo to Lagrange, to Asa Wood & Co. of Buffalo; from the latter place to Fredonia, to Hays & Co. of Rochester; from this place to near the line of the town of Ripley, to Cook McDonald, of St. Catherines, Canada, and from that point to Pennsylvania, to Messrs. Leet & Ely. The contractors are to have the work ready for the superstructure by the 1st January next.

Michigan.

Southern Railroad.—The extension of this road westward is rapidly progressing. The cars now run regularly to Jonesvile; and the villages of Hillsdale and Jonesville are now united by iron bands. The work is rapidly advancing, and in a few weeks we shall be able to greet our Coldwater friends and compliment them on their increased facilities for travel and business.

A ride over the road to Jonesville will satisfy any one of the great superiority of the T rail over any other kind. The road as far as completed gives evidence of the energy of the company and fidelity of the contractors. With the fare between the two villages at a shilling, it will insure a cheap and pleasant medium between their citizens. We cannot omit testifying to the gentlemanly deportment of the conductors upon this road.—*Hillsdale Gazette.*

Georgia.

Muscogee Railroad.—The Columbus Times of the 27th inst. says: "The board of directors at a meeting last week, passed an order for the purchase of locomotives for this road. The contractors are making good progress in grading and getting good timbers for the superstructure. It is expected that by the month of April, thirty miles of the road out of Columbus, will be ready for the cars. The section beyond the Flint river are now in process of location; and a large force will be put on them in November. We can thus see the end of this enterprise, and count safely upon a steam carriage from Columbus to Macon, in a little over twelve months."

Ohio.

Junction or Lake Shore Railroad.—The Sandusky Clarion says that "a meeting of the directors of the Junction railroad company was held at Elyria on Thursday last. A spirited competition existed among those favoring the different lines. The directors, after comparing advantages and offers, selected a route, beginning near Olmstead Falls, 13 miles west of Cleveland, and running by Elyria to Sandusky, and from thence to Toledo by Fremont, provided a satisfactory subscription should be made. All intermediate points remain open, but the route which appears the most favorable is by North Amherst and the lake shore.

The executive committee were directed to prepare the line for letting and to begin work at the earliest practicable period. A favorable contract for the whole line was offered, and is under consideration, and affords reason to expect the commencement of operations in a few days."

We learn that the distance from Cleveland to Toledo by the lake shore route is 110¼ miles, and that the estimated cost per mile is $17,282. The line will be run straight, the grade low, and altogether the route is remarkably feasible.

The common council of Cincinnati have recently recommended the granting of the following loans to internal improvement companies:

Ohio and Mississippi railroad via Laurenceburg	$600,000
Cincinnati and Lexington, Ky., railroad	100,000
Eaton and Cincinnati railroad	150,000
Belpre and Cincinnati railroad	150,000
Total	$1,000,000

Railroad from Chillicothe to Gallipolis.—A company has been organized under a charter, to construct a railway from Chillicothe to Gallipolis thro' Jackson, designed as a connecting link between the Virginia works which terminate at the mouth of the Kanawha, and the Belpre and Cincinnati, and the Scioto and Hocking Valley roads terminating at Chillicothe. The distance from Chillicothe to Gallapolis is 65 miles, and the Scioto Gazette assures us that 45 miles of the line are in the richest mineral region of the Valley of the Ohio. The whole line, it is said, is more favorable than is the Great Western line from Boston to Springfield, in Massachusetts.

Indiana.

We learn from a person that came down the line of the Bellefontaine road, that the iron cars will run this evening to within about a mile of Pendleton, and that the company expect to have the iron laid on the main track, and the switches and turn outs made complete next week; so as to put the first general section of the road of 28 miles from the Madison depot, at Indianapolis, in full operation by the first of October. This proves the energy and force that has been thrown upon the work this season. The union track has been completed, and this road has been laid with the heavy T rail and ballasted, carrying the gravel by steam power about twelve miles from the pits at extreme points. We further learn that the company expect to run the cars yet this season 8 miles further to Anderson. —*State Sentinel.*

The State Sentinel says:—"We are informed that the railroad meeting held last Saturday at Hagerstown, Wayne county, resolved to organize a company, and proceed at once to locate the road from Richmond, through Washington, Hagerstown and Newcastle to Pendleton, intersecting at that point the Indianapolis and Bellefontaine railroad. The distance between Richmond and Pendleton, on this route, would be about nineteen miles less, than that between Richmond and Indianapolis on the direct route, and would increase between Indianapolis and Richmond some seven miles over the Cumberland road line."

Railroad Subscription.—The register, at South Bend, Ia., says the county commissioners have agreed to subscribe $40,000 to the stock of the Michigan Southern railroad.

Jeffersonville and Columbus Railroad.—This road running from Jeffersonville opposite Louisville to Columbus, intersecting the Madison road about 40 miles from our city, is under the Presidency of Wm. G. Armstrong, Esq., of Clark country, whose energy of character alone would insure its construction, besides we understand that it is progressing steadily to completion. This road must prove highly important as a direct connecting link between Louisville and Indianapolis, and ultimately between the cities at the Falls of the Ohio, with their connecting links from Kentucky and Tennessee and the Atlantic cities. When this road shall be completed, it will be only six hours from Louisville to Indianapolis, eighteen hours from Louisville to Sandusky, twenty hours from Louisville to Cleveland or Pittsburgh, thirty three hours from Louisville to Philadelphia, thirty seven hours to New York, passing through Indianapolis, and running over the Bellefontaine, Ohio and Pennsylvania line.—*State Sentinal.*

Monopoly of the Right of Way.

The Erie Gazette, in an article upon the railroad in progress from that town to the New York State-line, to connect with the New York and Erie railroad, takes the following ground in relation to the extension of a railroad west of that place:

"This road, so grand in conception and so vast in result, we would convert not alone to our *general*, but to our *particular* benefit. Having the *power*, we need only the *disposition* to do it. As our contemporary of the Observer has remarked, our county "holds the key to the great western world, and *can* turn the lock so as to forever shut off an eastern railroad connection with that world, if she chooses." Will we not exercise this power firmly, fearlessly and judiciously, unintimidated by the menances of blustering corporations abroad—unseduced by the gilded bait of *dollars and cents*. A golden opportunity is now presented—the last, we fear, that will ever be offered of building up Erie, and placing her in a position of honorable and independent rivalry with other cities. Let us, as citizens, wake up from our lethargy, our culpable indifference, upon this important subject. Let us take a deeper interest in it—let us speak out boldly and fearlessly, and determine that *foreign influence* shall not assume and maintain the direction of an important thoroughfare through our county. Let us show a truly loyal spirit, and resolve that Erie *shall* be something more than a 'watering place' on the great lake shore iron-horse course."

So, then, Erie is to constitute herself an impassible wall, which is to forever cut off all connection between the railroads of New York and New England, amounting to an extent of line of 4,000 miles, and those of the west. For the benefit of the Erie people the distance from that place to the Ohio State-line is to be passed over both by passengers and freight by the old mode of conveyance; and a tribute, in the shape of the increased expenses of travel, is to be paid by the greater portion of the business men of the country. Erie, by virtue of her position, is going to tax every man and every pound of freight, that must pass through that town. The ground taken by this place is a most striking

illustration of the necessity of free railroad laws in every State. The doctrine here asserted, if carried out, would put a stop at once to the whole internal commerce of the country. In the end, to be sure, it could not be sustained in any case, against the united sentiment of the whole community, but until public opinion could exert its corrective influence, great annoyance and inconvenience might be suffered.

There is another remedy for this violation of popular right more effectual, but which honorable men would hesitate to make use of—that is, to buy it off; for, it may be laid down as a fixed fact, that those who are unprincipled enough to make it upon purely selfish grounds, are venal enough to have such opposition quieted for a price.

AMERICAN RAILROAD JOURNAL.

Saturday, September 28, 1850.

How to Cure Diseased Politicians.

The subject of party politics does not properly come within the scope of our paper, but in looking over our exchanges, something beside railroad matter will occasionally meet the eye; such, for instance, as the loud complaints which are uttered by the South at the aggressions of the "Northern barbarians," and the threats of disunion which are now so common in that quarter. By far the largest part of these complaints and threats, we believe to be the stock in trade of political aspirants; who, to bring themselves into notice, adopt the hyper-superlative in action and speech, just as ultra abolitionists at the North do, for the same object. These tricks on both sides are pretty well understood, and excite but little attention or concern on the part of the community. But we are bound to believe that in both parties there are some sincere persons who are really convinced of the truth of all they say. In the North, where political ideas connect themselves with the religious views of a person, we frequently find a very great pitch of fanaticism; but upon purely political subjects, the South outdoes us completely. The reason of this is very obvious. With us, our greater facilities for social intercourse, has a strong effect to correct and soften individual idiosyncrises: and the busy and active business habits of our people, allow but little time or opportunity for metaphysical speculations. And hence at the North we are more moderate in the expression of our opinions, simply because conviction with us is less intense than at the South. The Southerner does not enjoy these correctives to the same extent. The planter is comparatively isolated from the world. By fortune of birth, very like, his position and pursuits in life are determined. In business affairs he has little to do, but to jog along in the same track that his father followed. He has ample time for study and speculation, and in pursuing the bent of his own inclination, he has no corrective in the circumstances by which he is surrounded to prevent him from running to an extravagant pitch. He lives in his own ideas. His mind reacts upon itself, increasing the intenseness of his own convictions; so that when he comes into public life, he presents a marked contrast to the sober, plodding, calculating Northerner. The former, therefore, is bold, and emphatic, and states his view in formulas, which are as rigid and precise, as if they were used to express a mathematical truth; and is governed as much by them in the one case as in the other. The greater experience of the Northern man teaches him to state things hypothetically, as experience has taught him that in business matters, probabilities on either side always very nearly balance each other, he carries the same cautious mode of reasoning into his political speculations. With him

"The native hue of resolution is
Sicklied o'er with the pale cast of thought."

So that if the question of the disolution of the Union were presented to him, he would deliberate so long upon the advantages, pro and con., of such a step, that the time of action would pass by long before he had made up his mind. The Southern man, from his mode of reasoning, has all these questions settled at the start. He has demonstrated them to his satisfaction, and this gives an emphasis to his conduct which we rarely witness in his more phlegmatic neighbor.

Now, as we want to see the Union preserved—or rather, since there is no danger of this, we are desirous of seeing the proper remedies adopted for the purpose of bringing the extravagance of some of the Southern hotspurs to a comfortable and quiet point. both for the peace of the community and their own good, we would suggest to the more moderate of our Southern friends, to place such persons in positions where their attention will be turned to, and occupied by, practical affairs. The advantages of such a course will be two fold. It will create a distaste for theoretical speculation, from the superior charms that an active life possesses for most men; and it will at the same time show these men that, in the present condition of society at least, theory and the operations of natural laws, are often antagonistical; that in affairs, concession must be made to both; and that he is the wisest man who has discovered the true medium, and allows to each its legitimate and proper influence. This medium can only be discovered by great observation and experience; and in efforts to find it we are often misled: and often mistake the apparent for the real. This not only begets a distrust in the correctness of our reasonings, but our observations. The most sagacious man, therefore, is the most diffident as to the correctness of his own conclusions, or rather, perhaps, the most cautious in asserting their correctness. Upon every subject about as much may be said upon one side as the other. It is the *balance* of evidence that turns the scale.

The application of these remarks is very easy. If a man appears to be running mad upon political topics, make him president, or a working director, of a railroad. Keep him at this employment a few years, (a longer or shorter time to meet his particular case) and by that time he may with perfect safety be allowed to return to his old employments, for the experience he will have gained will be a sure safeguard against the repetition of his former extravagances.

So much for advice. We did not think of writing ten lines when we commenced, but we did not find any stopping place till the whole was penned. On some other "convenient occasion," we will take a look at the *Northern* side of political extravagance, and try to find out where the *balance* is. In the mean time, we sincerely hope that our Southern friends will commence at once to put our advice into practice, as they may with certainty rely upon its excellence.

Land Grants for Railroads.

We are sorry to see that Congress has refused to make a grant of land to aid in the construction of the Pacific, and the Hanibal and St. Josephs railroads, in Missouri. The construction of the former would be so much accomplished toward the great line to California or Oregon. We hoped that this consideration would have an influence upon Congress, and we now understand that the real merits of the case had but little to do with the action on the bill. We hope to see this body in better temper at its next session.

Virginia.

The people of Southwestern Virginia have recently held a convention at Wytheville, for the purpose of taking measures to provide means for putting another division of the Virginia and Tennessee railroad from Salem to Wytheville, a distance of 82 miles, under contract. To complete the road to this point, an additional individual subscription of $200,000 is necessary. The construction of the road to Wytheville, it is confidently believed, will secure the building of the whole line.

The meeting was addressed with eloquence and effect by Messrs. Garnet, Chief Engineer of the road, W. C. Flournoy of Prince Edward county, F. B. Deane, Jr., of Lynchburg, John M. Preston of Abingdon, H. L. Brook, and W. W. Crump of Richmond, W. P. Tunstall, President of the Richmond and Danville railroad, and B. R. Floyd of Wytheville. The importance of the road, not only to Virginia, but as one of the great thoroughfares for the whole country—the influence that its construction would have in restoring to Virginia her rank among the States, in building up her seaports, in stimulating the industry of her people, and in making available her great capacities of wealth—were the principal themes dwelt upon by the speakers. The people of Virginia are beginning to feel that they can only keep pace with their neighbors by bringing into use among themselves all those contrivances which modern science and art have discovered, either to aid or supersede muscular action. It is the steam engine which now makes a nation, or a community, great, rich and powerful; and under its influence more progress has been made in the past thirty years, than in the preceding five hundred; and the people that have availed themselves of it are as far in advance of those who have not, as the latter have advanced beyond their ancestors of 500 years.

Assurances were given at the convention that the city of Richmond would subscribe $100,000 of the sum wanted, if as much more could be obtained from the people on the line of the road. Suitable committees were appointed for the purpose of obtaining subscriptions; and our belief is, that from the spirit displayed at the convention, the necessary sum will be raised, If so, it will give a new impulse to the public improvement spirit of Virginia, and hold out great encouragement to other portions of the country engaged upon other parts of the great line of which this is an important link.

Maryland.

Baltimore and Ohio Railroad.—We learn from the Wheeling Gazette, that a large number of hands are now employed on the several sections of the Balitmore and Ohio railroad between that city and Grave Creek, on the contract of Messrs. McCassin, Coyle & Otterson, and that the work is progressing with a rapidity which promises the completion of the contracts within the shortest time estimated by any of the friends of this great work.

Wisconsin.

Milwaukee and Mississippi Railroad.—The Milwaukee Sentinel of the 13th has the following announcement of the opening of the first railroad in Wisconsin: "The first rails of the Milwaukee and

Mississippi railroad were laid down yesterday, and the first locomotive for the road arrived the same evening on the schooner Abiah from Buffalo. This locomotive is of the largest size and best pattern, weighing some twenty tons, and built in excellent style."

Virginia.

Virginia and Tennessee Railroad.—The Lynchburg Republican says that the tunnel near that place, which will form a part of the above named road, is rapidly progressing. The work has reached 95 feet, upon the north, and 55 feet upon the southwest side, making a distance already accomplished of 150 feet. Two sets of hands are employed, which regularly relieve each other, night and day, thus enabling the tunnelling to be carried on without intermission. The whole length of the tunnel will be about 450 feet, and will require until the middle of October to complete it. Along the entire line of the improvement to Salem, the progress is most encouraging to the friends of the road.

Illinois.

A friend in Illinois complains, that in an article on the railroads of that State, in our paper of the 31st ult., we did injustice to the Terre Haute and Alton railroad;—or, rather, that our saying that "we were not well informed" as to its condition and prospects, was not extending to it an equally favorable notice that we gave other roads in that State. It is true that we were not so well informed with regard to the above as the others, inasmuch as the proper officers had furnished us minute statement of the condition of each. We certainly ntended no disrespect, and are happy to be able to give a statement of the condition of the above project from authentic sources.

The above company has been organised under the general railroad law of Illinois, which provides that any number of persons forming themselves into an association, and subscribing stock to the amount $1,000 for every mile of railroad contemplated may organise themselves into a company for the choice of officers, etc. Such company may then apply to the Legislature for a charter, or for the privilege of taking the right of way for the road. Such a charter is necessary before the company can proceed to the work of construction.

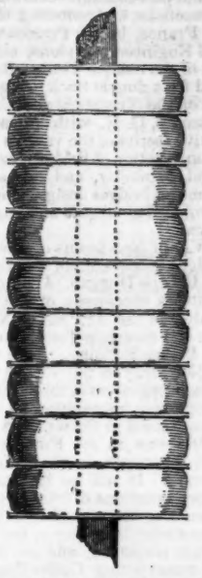
These preliminary steps have been taken by the above company. The route has been surveyed by way of Bunker Hill, Hillsboro, Shelbyville, Charleston and Paris, to Terre Haute. The right to commence the work of construction will undoubtedly be granted by the next legislature. The route as may be supposed is very favorable; and a portion of it, about 23 miles, was graded by the State many years since, which will be available to this work. We hope in a few days to receive the report of the engineer, W. P. Crocker, Esq., when we shall be able to give a more detailed account of this project. This will enable us to form an opinion as to the means of the people interested in it for its construction. That railroads in Illinois will pay if built, we have no doubt. Whether that shall be constructed or not is chiefly a question of *means*.

Ohio.

We understand that the survey of the Cleveland and Toledo railroad has been completed, and it is found to be a very favorable route. The maximum grade is 20 feet, and from Tremont to Toledo 28 or 29 miles, the road is a perfectly straight line.

The Cleveland, Columbus and Cincinnati road is completed to Wellington, a distance of 35 miles, and two passenger trains are running between that point and Cleveland daily. Commencing at Wellington, the surveyed line west passes near Brighton and Clarksfield, through Norwalk, Monroeville, Bellevue, Hamer's Corner's and Fremont, to Toledo, making the entire distance 78 miles.

Important to Railroad Co's and Car Builders.



THE question which for a long time has been pending before the Commissioner of Patents, involving the Validity of the Patent claimed by F. M. Ray, of this city, and W. C. Fuller, of England, for the use of India rubber for Railroad Car Springs in the '*Disc*' form, has been decided in favor of Mr. Ray, the American Inventor. This decision gives to Mr. Ray and his associates the sole right to manufacture and sell the India rubber Car Springs in all the varieties in use. Railroad Companies and Car Builders will please take notice of this fact. All purchases *that have been made* of any other persons, than said Ray and his associates, since the filing of his application, have been infringements of his patent, as well as all that may be made for the future.

To Contractors.

ALABAMA AND TENNESSEE RIVER R. R.

SEALED Proposals will be received by the Directors of the Alabama and Tennessee River Railroad, at their office in Selma, until the 1st of November next, for the graduation, masonry and bridging of 56 miles of the Southern Division of said road, extending northwardly from Selma.

Plans and profiles may be inspected and specifications and information will be given at the office of the company in Selma, on and after the 15th of October next.

Twenty-six miles of this division were graded in 1839. This part of the division will require repairs to the road bed, and will be furnished anew with culverts and bridges.

The country embraced in this division is healthy, well watered, and possesses facilities for obtaining supplies of provisions.

Proposals may be based upon cash payments, or upon payments of a proportion, or of the whole of the work in stock.

The Directors reserve to themselves the right to accept or reject proposals as they may think proper for the interests of the company.

The Directors expect to have as much as twenty miles of the Northern Division, extending northwardly from the Coosa river in Shelby county, ready for examination by the 15th November, and for letting by the 1st December; and 30 miles more, ready for examination by the 1st and for letting by the 15th of January, 1851. It is likewise their intention to let out the grading, masonry and bridging of the remainder of the Southern Division and of the Northern Division terminating at Gadsden, with all possible despatch.

By order of the President and Directors.

LEWIS TROOST, Chief Engineer

Selma, Ala., August 30, 1850.

OFFICE FULLER'S PATENT INDIA-RUBBER SPRINGS,
New York, Sept. 25, 1850.

IN the Railroad Journal of last week, Mr. Ray, by advertisement, made statements totally untrue; for the purpose of misleading the parties interested in the use of India-rubber Springs. With respect to the patent granted a few days since by the present Commissioner of Patents to F. M. Ray, the facts of the case are as follows:

In 1845, Mr. W. C. Fuller obtained a patent in England for the application of Vulcanized India-rubber to springs of railroad cars; and in 1846, applied and obtained a patent for the same invention in the United States. Subsequent to this, Mr. Fowler M. Ray, and his associates, obtained a patent for a spring composed of cylinders of rubber made air tight, which proved to be of no value. He then commenced infringing upon Mr. Fuller's patent, but receiving notice to desist, he applied, in 1848, to Mr. Burke, the then Commissioner of Patents, for a patent similar to that granted to Fuller, which application was promptly refused. An interferance was then declared by Ray and his associates, which after consideration by Mr. Burke, was dismissed. No appeal was made by Ray, and thus ended the matter.

Mr. Ewbank succeeded Mr. Burke, and M. Keller, a very warm and influential friend of Mr. Ewbank, was employed by Mr. Ray to procure a patent. Mr. Ewbank, setting aside the decision of Mr. Burke, and against the evidence produced by Mr. Fuller, on the hearing of the case before the U. S. Commissioner, has thought fit to grant Ray a patent. Proceedings have already been commenced, and the legality of this patent will be forthwith tested in a Court of Equity, where no undue influence can reach. In the meantime Fuller's patent stands valid and untouched, and all Mr. Ray's notices and advertisements about infringements by Fuller, upon his rights, and all implied threats of prosecution against those using Fuller's springs are intended to deceive the public and defraud Fuller.—This gross attempt to deprive Mr. Fuller of his lawful rights as original inventor and patentee of India-rubber springs for railroad cars, etc., will be fully exposed in a court of law, till when, the directors of the various railroads in the United States, and others concerned, are cautioned against being misled or intimidated by any of Ray's misrepresentations.

With regard to the material of which the springs are composed, the rubber used by Mr. Fuller is made by Mr. Day, or by the Boston Belting Co., either under their own patents or that granted to Goodyear; the fact of Mr. Day having manufactured Vulcanized India-rubber two years before Goodyear applied for a patent, having given him a concurrent right to use it.

The statement that Mr. Day made opposition or was engaged to oppose Ray is not true. Mr. Day was never present at the taking of testimony except on the occasion of giving his own. The whole controversy was between the original inventor Fuller, whose agent the subscriber is, and the parties who are seeking to defraud him of his most valuable discovery.

Below is the opinions of counsel upon these questions.

NEW YORK, Sept. 23, 1850.

Sir: Yours of this date in relation to W. C. Fuller's and F. M. Ray's patents for India-rubber springs, is received. I state in reply that I have been one of the counsel for Mr. Fuller in the controversy, and understand the points involved in it. Mr. Fuller's patent was granted in England on the 23d October, 1845, and in the United States on the 24th October, 1846.

His American patent (the one in question) has not been annulled, repealled, or declared void or invalid, but it remains in full force and validity. He can maintain suits for violation of it. Purchasers using it cannot be made responsible to Mr. Ray under his patent: first, because they act under the authority of the United States, in their patent to Fuller, and second, because Ray's patent was issued contrary to the express provisions of the statute, and on that account is utterly void. No suit can be sustained upon it by Ray against any one.

The Commissioner of Patents, in his order for its issue, indicated his doubts on the subject of the right to issue it (his predecessor, Mr. Burke, having expressly refused Ray a patent) and says he gives Ray the benefit of his doubts, and consequently made the order.—The error in granting this patent to Ray, under the facts and law of the case, is so palpable that I have been retained by Mr. Fuller to institute a suit in the U. S. Circuit Court to set it aside, and I am now preparing a Bill to be filed at once.

Your obedient servant, R. H. GILLET.

G. M. KNEVITT, Esq., Agent for W. C. Fuller.

I fully concur in the opinions above expressed.

F. B. CUTTING,

Counsel for Fuller, Wall st., Sept. 25, 1850.

G. M. KNEVITT,

Agent and Attorney for W. C. FULLER.

Great American Engineering

AND MECHANICAL WORK, just published in medium folio One Dollar, 75 cts. to Subscribers.

Part VII of "Specimens of the Stone, Iron & Wood Bridges, Viaducts, Tunnels, Culverts, &c., &c., of the United States Railroads." By George Duggan, Architect and Civil Engineer.

The present part contains beautifully executed plans, elevations, sections and details of the elegant timber Bridge, (Burr's Patent,) 150 feet span, across Salmon River, Malone, on the line of the Northern—Ogdensburg railroad, and isometrical views of Bridges 30, 40 60, 82 and 88 feet span on the line of the Utica and Syracuse railroad, with specifications, form of contract, &c. &c., for the Connecticut River railroad.

"It is a work that was a great desideratum, and must prove of great benefit to the engineering profession generally, and especially to the tyro in practical engineering and mechanical knowledge; in truth it strikes us, that it would require years of labor and patient toil on the part of a young engineer to prepare the drawings, and collect the information that will be embodied in this work, and can now be secured for the trifling sum of $9"—[Scientific Amer. March 16, 1850.

In connection with this subject (Iron Railroad Structures) we take occasion to call attention again to Mr. Duggan's valuable and expensive publication, exhibiting drawings, with full descriptions of the various stone, iron and wooden bridges, viaducts, tunnels, culverts, etc., of all the Railroads in the United States. Mr. Duggan is an accomplished Architect and Civil Engineer, who came from Ireland to this country to exercise his profession; but finding Railroad construction here, in many respects, different from that he had been accustomed to in Europe, he applied himself to the study of our system; and the fruits of his researches and investigations embodied in this work, are well calculated to meet the exigencies of engineers, and to assist draughtsmen, bridge builders, mechanics and students.—[N. Y. Jour. of Com., Feb. 14, 1850.

Published by GEORGE DUGGAN,
300 Broadway, New York.

To whom all communications should be addressed, and subscriptions forwarded.

Emerson's Patent Ventilator,

ADAPTED to Cars, Engine houses, Public Halls, Factories, Churches, School Houses, Dwellings, Chimney Flues, etc.

This Ventilator is stationary, and cannot get out of order. It is constructed in such conformity to cert in ascertained laws of pneumatics, as to insure a constant draft outward, whatever may be the changing direction of the wind. The Massachusetts Mechanic Association have awarded a gold medal to the Inventor, and the Manufacturers have already disposed of over 3,000 of the article. Manufactured and sold by

CHILSON, ALLEN, WALKER & Co.,
351 Broadway, New York.

NOTICE

For Proposals for Railroad Iron, for the Alabama and Tennessee River Railroad,

TO BE MANUFACTURED FROM ALABAMA ORE.

THE Alabama and Tennessee River Railroad Co. invite proposals, until the 1st of January, 1851, for Iron Rails, to be made of Alabama Iron, for the Northern Division and part of the Southern Division of their road, embracing a distance of about 105 miles. The rails are to be of the H pattern, in lengths of 18 feet, and weighing 63 lbs. per lineal yard. They are to be delivered on the Coosa river, at a landing to be hereafter designated, between Kimulgee ferry and Fort Williams, commencing their delivery on the 1st of November. 1851, and continuing it at the rate of from 80 to 100 tons per week, until the whole quantity required (10,500 tons) shall have been delivered. They are to be inspected by Lewis Troost, Chief Engineer.

It is proper to state to iron masters and capitalists at a distance, that the country traversed by the Northern and part of the Southern divisions of the road abounds in excellent iron ore and bituminous coal. and possesses every advantage for the successful manufacture of iron, health, cheap labor and provisions.

Further information may be obtained by addressing the President of the Company at Selma, Ala.

By order of the Board of Directors.

J. W. LAPSLEY, President.

August 16, 1850.

Great Work on Bridge Building, etc., etc.

JUST published in medium folio, One Dollar, 75 cts. to subscribers.

Part I. of a "THEORETICAL AND PRACTICAL TREATISE ON THE CONSTRUCTION OF BRIDGES IN STONE. IRON AND WOOD," By George Duggan, Architect and Civil Engineer.

The present part contains beautifully executed plans, elevations, sections, and centering, of the Bridge of St. Maixence, France, by M. Perronet, the eminent Architect and Engineer, and plans, elevations, sections, and details of the oblique Timber Bridge, 700 ft. long, constructed for a double track across the River Tyne, on the line of the Newcastle and Carlisle railroad, by John Blackmore, C. E., with an introductory article on the relative merits of the various materials employed in the construction of Bridges, as regards economy, strength and durability, and critical remarks on the various forms of bridges designed and constructed by the most eminent architects and engineers in Europe and America.

"PART VI. of Specimens of the Stone, Iron and Wood Bridges, etc., etc., of the United States Railroads," By George Duggan, Architect and Civil Engineer, contains specimens of the plates and letter press intended for the APPENDIX, being the commencement of a complete Treatise on the Theory and Practice of Bridge Building. This will be one of the most valuable works on the subject ever presented to the attention of engineers in this country—condensing the most important information on this branch of architecture contained in the writings of the most eminent scientific men in the French, German, Italian, and English languages, in the course of the last and present century. It will be illustrated by numerous accurate representations of bridges of the greatest celebrity in modern times. Elaborate articles will be given on the strength, property, and uses of the different materials employed, and on the most approved methods of constructing Coffer Dams, Foundations, Centering, etc., with descriptions and drawings of the various engines and Machines that were found most useful in constructing the works, and a selection of such specifications as may be of service to the practical bridge builder. The sixth number treats of the Application of Iron to Railroad Structures, and is illustrated by beautiful drawings of the Bridge across the Delaware at Saw Mill Rift on the Erie Railroad, and of the bridge over Fairfield street, on the Manchester and Birmingham Railroad. The great success of this work thus far is the best tribute to its scientific merit and its adaptation to the wants of the American engineer."—[New York Daily Tribune, June 28, 1850.

Published by George Duggan, 300 Broadway, New York, to whom all communcations should be addressed and subscriptions forwarded.

☞ Parties remitting Mr. Duggan $5 and the remainder $4 when they have been supplied with the first six parts of the "Theoretical and Practical Treatise on Bridge Building, etc.." shall receive it monthly as published. To those making Mr. Duggan a present remittance of $9, the work will be forwarded post free to any part of the United States.

Rosendale Cement.

THE NEWARK AND ROSENDALE LIME AND CEMENT CO. are now manufacturing at their works in NEWARK, N. J., and Ulster county, N.Y., a very superior article of *Hydraulic Cement*—also Lime Calcine Plaster, etc. Contractors and dealers will find it to their advantage to call or make application before purchasing elsewhere. All communications addressed to the subscriber, at Newark, N.J., will be punctually attended to.

1y*15 HENRY WILDE, Secretary.

Notice to Contractors.

SEALED PROPOSALS will be received at the office of the James River and Kanawha Company in Richmond, until the 1st day of October next, for the construction of the Piers and Abutments of the Bridges across James River at New Canton, Hardwicksville and Bent Creek. This work will be paid for in cash. Besides the usual reservation of 20 per cent. on the monthly estimates, the contractor or contractors will be required to give ample security, satisfactory to the Board of Directors, for the completion of the work at the time and in the manner specified in the contracts.

Plans of the above works will be exhibited and specifications thereof delivered to the contractors at the office of John Couty, the Assistant Engineer in charge of the same in Columbia.

WALTER GWYNN,
Chief Eng. J. R. & K. Co.

GRAHAM'S COMPOSITION, to Remove and Prevent Incrustation (or Scale) in STEAM BOILERS.

THIS valuable compos tion having been fully and extensively tested, is now offered to the public, as a sure remedy and preventive for incrustations in steam boilers of all descriptions. By its use, all scale is entirely removed from the boilers of Ocean and River Steamers, Locomotive and Stationary Engines, in from 3 to 20 running days, according to the size of the boiler and thickness of the scale. In New Boilers, all incrustation is prevented at a trifling expense.

The preservation of the boiler, great economy of fuel and labor, safety, and increased speed, are among the advantages to be derived from the use of this composition.

Orders should state the quality of water used, viz: "Salt," "Fresh," or "Brackish."

For sale, with directions for use, by

W. H NEWMAN,
75 Pearl street,
New York.

TESTIMONIALS.

New York. August 17, 1850.

We have used Graham's Composition in the boilers of the Steamship Southerner, during several voyages between this place and Charleston. The boilers were old and very foul with scale, a very large quantity of which was removed by the use of the composition, and no new scale was formed.

From our own experience and observation in the use of the article, we are fully satisfied that it will effectually remove the incrustation made by sea water, and also that it will effectually prevent its formation.

We are also satisfied that the use of it will be attended with a great saving of fuel, and that it has no injurious effect upon iron.

DAVID N. MAXON, Engineer,
BERRY, Master,
Steamship Southerner.

Steamship Philadelphia,
New York, August 27, 1850.

I have used "Graham's Composition for Steam Boilers," in the boilers of Steamship Philadelphia, on the voyage to and from Chagres, and am entirely satisfied that it will remove, dissolve and *prevent* all scale or incrustation in salt water boilers.

For the preservation of the boiler and economy of fuel and labor, I hereby recommend the employment of this composition in the Boilers of Ocean Steamers.

WM. BISBY,
Chief Engineer.

Novelty Iron Works,
New York, July 5, 1850.

We have examined the specimen of Graham's Composition for preventing incrustation of steam boilers, and we believe it may be used with perfect safety in reasonable quantities for the purpose intended, as there does not appear to be any agent in the composition calculated to injure the iron.

STILLMAN, ALLEN & CO.

Piermont, May 20, 1850.

I have used "Graham's Composition," and find it to produce the intended effect; and I hereby, without hesitation, recommend it for Stationary, Marine and Locomotive Engine Boilers.

JOHN BRANDT,
Superintendent Motive Power
New York & Erie R.R.

New York, July 25, 1850.

In answer to many inquiries as to the practical effect of "Graham's Composition," I will state that I have used it in the boiler of the Steamboat Sunwick, which had become considerably incrusted with hard scale from both salt and fresh water. We used 10 lbs. per day, for three days, without blowing off the water, until the fifth day, when all was drawn off. To our astonishment, we found the whole interior of the boiler as clear of scale and smooth as when it came from the hands of the maker. The following week, we tried the same quantity in a small steam tow boat.—The boiler had old scale of long accumulation and very thick. We ran the boat three days without blowing off, and on the fourth day washed out the boiler and found it, like the "Sunwick's," perfectly clean and smooth as when new. I am therefore enabled to state that the use of the composition in these two instances under my own immediate observation and direction, has been attended with complete success.

JAMES MORROW,
Engineer Astoria Ferry.

Faggotted Car and Engine Axles

FORGED by RANSTEAD, DEARBORN & Co., Boston, Mass.

These Axles enjoy the highest repulation for excellence, *and are all warranted.*

Ogden & Martin's ROSENDALE CEMENT.

WE are prepared to enter into arrangements for supplying our Cement for public works or other purposes. We warrant the cement equal in every respect to any manufactured in this country. It attains a great degree of hardness, setts immediately under water, and is a superior article for masonry coming in contact with water, or requiring great strength.

For sale in tight barrels, well papered, at their office by OGDEN & MARTIN, 104 Wall st.

February 16, 1850. 1y*

The above cement is used in most of the fortifications building by government.

Railroad and Mathematical Instruments.

KUNS & BASELER, Mathematical Instrument makers, manufacture and keep for sale all kinds of mathematical instruments: also drawing instruments, scales and balances for the use of chemists, professional gentlemen, jewellers, etc., etc., of the most perfect description, at the lowest price, at 81 Nassau street, New York.

Ibbotson, Brothers & Co's CELEBRATED CAST STEEL AND

Best Cast Steel Royal Improved Files, well known as better adapted for Engineers' and Machinists' purposes than any now in use in the United States.

Every description of Square, Octagon, Flat and Round Cast Steel, Sheet, Shovel and Railway Spring Steel, etc., and Steel to order for any purposes—manufactured at their works in Sheffield—and universally known by the old stamp "Globe."

HENRY I. IBBOTSON, Agent.,
218 Pearl st., New York.

Railroad Iron.

OF ANY PATTERN AND WEIGHT,
Of a Favorite Brand,
And deliverable in Bond, or Duty paid, at any Port of the U. S., contracted for on favorable terms, by

CHARLES ILLIUS,
20 Beaver St., New York.

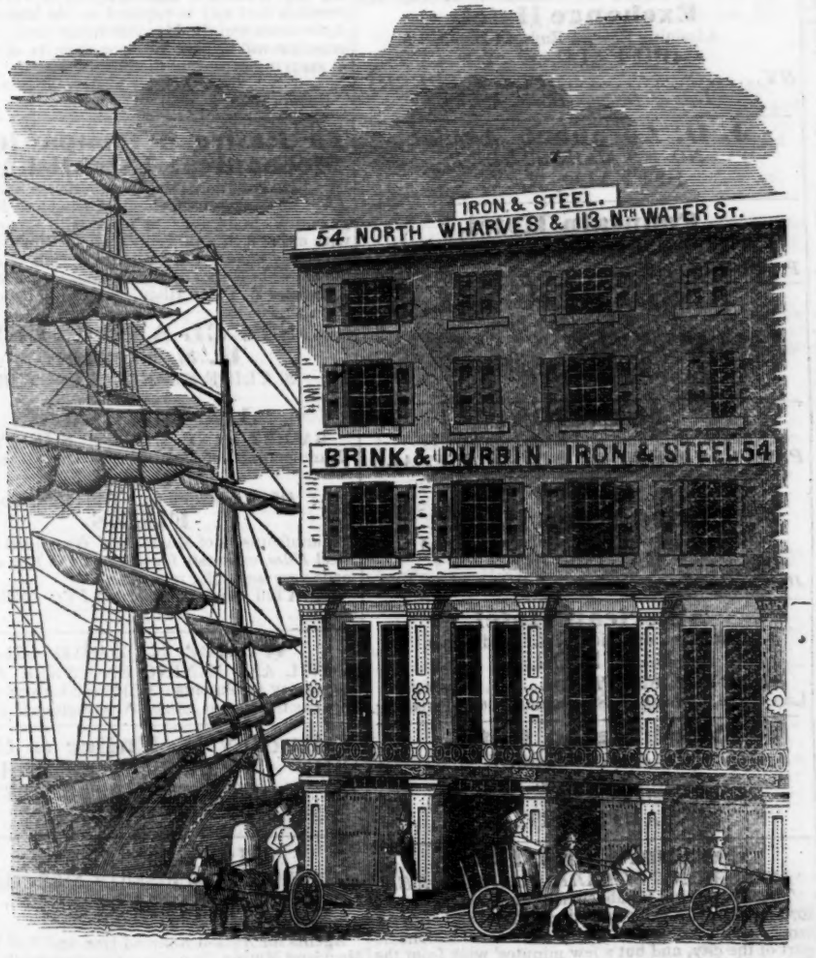
Pig and other Iron also contracted for. Sole Agent for "*Baxter's Machine and Burning Oil*"—particularly adapted for "*Railroads*" and other Machinery—Preferred to Sperm by the many now using it, and 25 *per cent. cheaper.*

Coal.

CUMBERLAND SEMI-BITUMINOUS COAL superior quality for Locomotives, for sale by

H. B. TEBBETTS,
No. 40 Wall St., New York.

May 12, 1849. 1m19

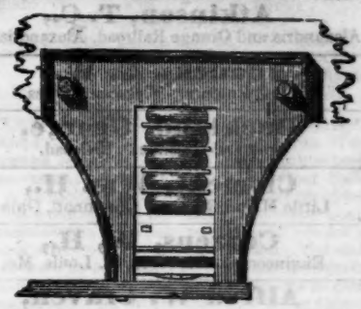


To Merchants, Railroad Companies, Machinists and Boiler Makers.

THE subscribers beg leave to call attention to their very large stock of *Iron* and *Steel*—of American, English, Swede and Norway make—of all the different kinds in use. Also, Railroad Iron, Ship, Boat and Railroad Spikes. They are also Agents for the *Best Pennsylvania Locomotive Boiler and Tank Iron*, each sheet of which will be *stamped and warranted*, at lowest mill prices. Our prices for all kinds of iron will be found *very low*, either for cash or approved credit.

BRINK & DURBIN, *Philadelphia.*

FULLER'S PATENT INDIA RUBBER SPRING.



THESE SPRINGS ARE THE CHEAPEST, the lightest and most durable of any yet known. They are easily applied to new or old cars, and there is small possibility of any accident occurring to them.

Other parties through Mr. Ray set up claims to an India Rubber Spring which, though the same in principle, is very inferior in its working and durability.—Actions are in progress for an Infringement on Fuller's Patent against parties using that Spring.

The superiority of Fuller's Spring over that claimed by Mr. Ray is fully established and has frequently been testified to. The following are from gentlemen who have had much experience with both Springs.

—

"It will afford me pleasure to recommend your springs to the companies in this region, in preference to Ray's which I am confident are inferior in mechanical arrangement to yours." JOHN M'RAE,
Engineer S. Carolina R. R., Charleston.

—

"I do not hesitate to allow you to say that I concur in Mr. M'Rae's opinion that Ray's springs are inferior in mechanical arrangement to Fuller's. I repeatedly expressed that opinion long before Mr. M'Rae had seen your springs (as I believe) and entertain it still." WM. PARKER,
Gen'l Supt. of Baltimore and Ohio R. R.

—

Office of Sup't Norwich & Worcester R.R Co.
December 26, 1849.

"I most fully concur in the opinion of Jno. McRae, Engineer of S. Carolina Railroad, that 'Rays Springs are inferior to Fuller's Springs;' and shall with pleasure recommend them to all Railroad Companies for adoption. I have used both springs on this road and have no hesitation in saying that I should in all cases prefer Fuller's Spring."

SAM'L H. P. LEE, JR.,
Sup't and Engineer.

—

Office B. & P. R. R. Co.,
Boston, 20th December, 1849.

"This company have cars fitted up with both Ray's and Fuller's 'Metallic India Rubber Springs,' and do not hesitate to say that Fuller's arrangement *very much superior* to Ray's.

W. RAYMOND LEE, Supt.

—

The following result has been obtained by experiment upon one railroad.

A set of Trucks fitted with Steel Springs cost	$190·77	and weigh	2355 lbs.
The same with Fuller's Springs, ...	131·71	"	1911 lbs.
Difference, . .	$59·06	"	444 lbs.

Not only is there an advantage in the cost, but owing to the great reduction in weight, the car can be made lighter throughout, and so an enormous saving in weight may be effected in a Train.

AGENTS.

G. M. KNEVITT, 38 Broadway, N. Y.,
JOHN THORNLEY, 110 Chestnut St., Philad.
The BOSTON BELTING CO., Milk st., Boston.

January 2, 1850.

American Cast Steel.

THE ADIRONDAC STEEL MANUFACTURING CO. is now producing, from American iron, at their works at Jersey City, N.J., Cast Steel of extraordinary quality, and is prepared to supply orders for the same at prices below that of the imported article of like quality. Consumers will find it to their interest to give this a trial. Orders for all sizes of hammered cast steel, directed as above, will meet with prompt attention.

May 26, 1849.

ENGINEERS.

Atkinson, T. C.,
Alexandria and Orange Railroad, Alexandria, Va.

Bancks, C. W.,
Civil Engineer, Vicksburg, Miss.

Buckland, George,
Troy and Greenbush Railroad.

Clement, Wm. H.,
Little Miami Railroad, Cincinnati, Ohio.

Cozzens, W, H,,
Engineer and Surveyor, St. Louis, Mo.

Alfred W. Craven,
Chief Engineer Croton Aqueduct, New York.

Davidson, M. O.,
Eckhart Mines, Alleghany Co., Maryland.

Fisk, Charles B.,
Cumberland and Ohio Canal, Washington, D. C.

Felton, S. M.,
Fitchburgh Railroad, Boston, Mass.

Floyd-Jones, Charles,
South Oyster Bay, L. I.

Gzowski, Mr.,
St. Lawrence & Atlantic Railroad, Montreal, Canada.

Gilbert, Wm. B.,
Rutland and Burlington Railroad, Rutland, Vt.

Grant, James H.,
Nashville and Chattanooga R. R., Nashville, Tenn.

S. W. Hill,
Mining Engineer and Surveyor, Eagle River, Lake Superior.

Hewson, M. Butt,
Memphis, Tenn.

Holcomb, F. P.
Southwestern Railroad, Macon, Ga.

Johnson, Edwin F.
New York and Boston Railroad, Middletown Ct.

Latrobe, B. H.,
Baltimore and Ohio Railroad, Baltimore, Md.

Miller, J. F.,
Worcester and Nashua Railroad, Worcester, Mass.

Morris, Elwood,
Schuylkill Navigation, Schuylkill Haven, Pa.

Morton, A. C.,
Atlantic and St. Lawrence Railroad, Portland, Me.

McRae, John,
South Carolina Railroad, Charleston, S. C.

Nott, Samuel,
Lawrence and Manchester Railroad, Boston,

Prichard, M. B.,
East Tennessee and Georgia R. R., Cleveland, Tenn.

Roebling, John A.,
Trenton, N. J.

W. Milnor Roberts,
Bellefontaine and Indiana Railroad, Marion, Ohio.

Roberts, Solomon W.,
Ohio and Pennsylvania Railroad, Pittsburgh, Pa.

Sanford, C. O.,
South Side Railroad, Virginia.

Schlatter, Charles L.,
Northern Railroad (Ogdensburg), Malone, N. Y.

Sours, Peter,
Rahway, New Jersey.

Stark, George.,
Bost., Con. and Mont. R. R., Meredith Bridge, N. H.

Steele, J. Dutton,
Pottstown, Pa.

Trautwine, John C.,
Panama Railroad—Address through office of Panama Railroad Co., 78 Broadway, N. Y.

Trimble, Isaac R.,
Philad., Wil. & Baltimore Railroad, Wilmington, Del.

Tinkham, A. W.,
United States Fort, Bucksport, Me.

Thomson, J. Edgar.,
Pennsylvania (Central) Railroad, Philadelphia.

Troost, Lewis,
Alabama and Tennessee Railroad, Selma, Ala.

Whipple, S.,
Civil Engineer and Bridge Builder, Utica, N. Y.

Williams, E. P.,
Auburn and Schenectady Railroad, Auburn, N. Y.

Williams, Charles H.,
Milwaukie, Wisconsin.

HOTELS.

Exchange Hotel,
Adjoining Eastern Railroad Depot,
BUFFALO, N. Y.
BY.....FISK & SPERRY,
Late of Delevan House, Albany.

J. D. Abraham, *Architect,*
NO. 300 *MAIN STREET,*
BFFFALO, N. Y.

Fountain Hotel,
LIGHT STREET, BALTIMORE,
P. THURSTON.....Proprietor.

DUNLAP'S HOTEL,
On the European Plan,
NO. 135 FULTON STREET,
Between Broadway and Nassau St.,
NEW YORK.

MANSION,
Corner of Maine and Exchange Streets,
P. DORSHIMER. *BUFFALO.*

GUY'S
United States Hotel,
(Opposite Pratt street Railroad Depot,)
BALTIMORE.
JOHN GUY. *WILLIAM GUY.*

American Hotel,
Pratt street, opposite the Railroad Depot,
BALTIMORE.
HENRY M. SMITH.....Proprietor.
Late of the Exchange & St. Charles Hotels, Pittsburg.

Washington Hotel,
BY JOHN GILMAN,
$1 *Per Day.*
No. 206 Pratt street, (near the Depot,)
BALTIMORE.

Barnum's City Hotel,
MONUMENT SQUARE, BALTIMORE.
This Extensive Establishment, erected expressly for a Hotel, with every regard to comfort and convenience, is situated in the centre and most fashionable part of the city, and but a few minutes' walk from the Railroad Depots and Steamboat Landings.
The House has lately undergone a thorough repair, embracing many valuable improvements, and will accommodate 250 Guests. BARNUM & CO.

JONES' HOTEL,
NO. 152 CHESTNUT STREET,
PHILADELPHIA.
BRIDGES & WEST, ... Proprietors.

BUSINESS CARDS.

Lithography.
JOHN P. HALL & CO.,
161 Main st., Buffalo, (Commercial Advertiser Build.)
Are prepared to execute all kinds of Lithography in good stole and at reasonable rates. Particular attention wil be paid to Engraving Railroad Maps, Engineer's Plans and drafts, etc., and orders in this line are respectfully solicited.

J. T. Hodge
Will attend to the examination of mining tracts near Lake Superior, and prepare Reports and Maps.
Address, during the Summer,
[Ontanagon Postoffice, Lake Superior.

Cumberland Steam Coal,
FROM THE
FROSTBURG MINES, MD.
H. A. TUCKER,
Agent of Frostburg Coal Co.
No. 50 Wall Street, New York.

Eaton, Gilbert & Co.,
Railroad Car, Coach and Omnibus Builders,
TROY, N. Y.

Charles T. Jackson, M. D.,
STATE ASSAYER, late Geologist to Maine, Rhode Island, New Hampshire, and the United States, offers his services to his friends and the public in making any Chemical, Mineralogical or Geological researches that may be required for the improvement of Agriculture and the Manufacturing Arts. Particular attention wili be paid to the exploration of mines and to assaying of ores of the metals.
State Assayer's office, 31 Somerset st.
Boston Sept. 3, 1850.

To Railroad Companies and Mechanical Establishments.
A Person of considerable experience and practical knowledge in Mechanical, Civil and Marine Engineering, is anxious to meet with an engagement with either a Private Individual or Public Company, who may have works either to design or execute in the above branches of the Engineering Profession.
Address Z. Y., 47 Atlantic st., South Brooklyn, L.I.

STEEL AND FILES.
R. S. Stenton,
20 CLIFF STREET, NEW YORK,
AGENT FOR
J. & Riley Carr's
BAILEY-LANE WORKS, SHEFFIELD,
Manufacturers of Cast, Shear, German and Blister
STEEL
Of all descriptions. *Warranted* Good
FILES.
Manufacturers of Machinists' Warranted Best Cast Steel *Files*, expressly for woring upon Iron and Steel, made very heavy for recutting.
☞ A full Stock of *Steel* and *Files* at all times on hand. 6m4

Walter R, Johnson,
CIVIL AND MINING ENGINEER AND Attorney for Patents. Office and Laboratory, F St., opposite the Patent office, Washington, D. C.

Dudley B. Fuller & Co.,
IRON COMMISSION MERCHANTS,
No. 139 GREENWICH STREET,
NEW YORK.

Manning & Lee,
GENERAL COMMISSION MERCHANTS,
NO. 51 EXCHANGE PLACE,
BALTIMORE.
Agents for Avalon Railroad Iron and Nail Works. Maryland Mining Company's Cumberland Coal 'CED —'Potomac' and other good brands of Pig Iron.

Cop Waste.
CLEAN COP WASTE, suitable for cleaning Railroad, Steamboat and Stationary Engines, constantly an hand and for sale by
KENNEDY & GELSTON,
5½ Pine St., New York.
October 27, 1849, 3m

PLUSHES
FOR
Railway Cars & Omnibuses.
F. S. & S. A. MARTINE,
112 WILLIAM ST., NEAR JOHN.

ARE now receiving a large and complete assortment of Plain and Figured PLUSHES, of their own importation, which will be sold at the lowest market price, viz: Crimson, Maroon, Scarlet, Green, Blue, Purple, etc.

ALSO—CURLED HAIR, the best manufactured in market.

Samuel Kimber & Co.,
COMMISSION MERCHANTS
WILLOW ST. WHARVES, PHILADELPHIA.

AGENTS for the sale of Charcoal and Anthracite Pig Iron, Hammered Railroad Car and Locomotive Axles, Force Pumps of the most approved construction for Railroad Water Stations and Hydraulic Rams, etc., etc.

July, 27, 1849.

James Herron, *Civil Engineer*,
OF THE UNITED STATES NAVY YARD,
PENSACOLA, FLORIDA.,
PATENTEE OF THE
HERRON RAILWAY TRACK.

Models of this Track, on the most improved plans, may be seen at the Engineer's office of the New York and Erie Railroad.

To Railroad Companies.
—WROUGHT IRON WHEELS—
SAFETY AND ECONOMY.
NORRIS' LOCOMOTIVE WORKS,
SCHENECTADY, NEW YORK,

Are Manufacturing Wrought Iron Driving, Truck, Tender, and Car Wheels—made from the best American Iron. Address E. S. NORRIS.

May 16, 1849.

Manufacture of Patent Wire ROPE AND CABLES,

For Inclined Planes, Suspension Bridges, Standing Rigging, Mines, Cranes, Derrick, Tillers, &c., by JOHN A. ROEBLING, Civil Engineer,
TRENTON, N. J.

Doremus & Harris,
ANALYTICAL & CONSULTING CHEMISTS,
179 BROADWAY, NEW YORK.
☞SCHOOL OF CHEMISTRY.☜

To Engineers and Surveyors.

E. BROWN AND SON Mathematical inst. makers No. 27 Fulton Slip, New York, make and keep for sale, Theodolites, Levelling inst., Levelling rods, Surveyors Compasses, and Chains, Cases of Mathematical drawing insts. various qualities, together with a general assortment of Ivory Scales and small insts. generally used by Engineers.

Ranstead, Dearborn & Co.,
MANUFACTURERS OF
LOCOMOTIVE CRANKS AND CAR AXLES,
ALSO
WROUGHT IRON SHAFTING,
And All Kinds of Hammered Shapes.

Forge at Commercial Point, Dorchester,
Office 25 Foster's Wharf, opposite No. 211 Broad St.
BOSTON.

Henry I. Ibbotson,

IMPORTER of Sheffield and Birmingham Goods. Also, Agent for the Manufacture of Telegraph Wire. 218 PEARL ST., NEW YORK.

Cumberland, (Md.,) Coals for Steaming, etc.

ORDERS RECEIVED FOR AND FILLED by J. COWLES, 27 Wall St., N. Y.

Samuel D. Willmott,
MERCHANT, AND MANUFACTURER OF
CAST STEEL WARRANTED SAWS,
—AND FILES—
IMPORTER OF THE
GENUINE WICKESRLY GRINDSTONES
NO. 8 LIBERTY STREET,
NEW YORK.

Railroad Instruments.

THEODOLITES, TRANSIT COMPASSES, and Levels, with Fraunhoffers Munich Glasses, Surveyor's Compasses, Chains, Drawing Instruments, Barometers, etc., all of the best quality and workmanship, for sale at unusually low prices, by
E. & G. W. BLUNT,
No. 179 Water St., cor. Burling Slip.

New York, May 19, 1849.

IRON.

Car Wheel Iron.

100 Tons "Columbia" No. 2 Cold Blast Charcoal Iron.
300 Tons "Salisbury" No. 1, do. do.
For sale by CHARLES T. GILBERT,
No. 80 Broad st.

New York, Sept 21, 1850.

Railroad Spikes.

THE subscribers are prepared to make and execute contracts for Railroad Spikes of a superior quality, manufactured by the New Jersey Iron Company, at Boonton. DUDLEY B. FULLER & CO.
139 Greenwich st. corner of Cedar.

Railroad Iron.

FOR SALE—500 Tons of superior flat bar Railroad Iron, two and a half by three-fourths—which has been in use on the Cumberland Valley Railroad for about three years. For terms apply to Henry J. Biddle, Esq., Philadelphia, or to FREDK. WATTS,
President of the Cum. Val. R.R., Carlisle, Pa.

Carlisle, Sept. 17, 1850.

Railroad Iron.

1650 Tons, weighing about 61 lbs. per yard, 40 tons, weighing about 52 lbs. per yard, and 825 tons, weighing about 53½ lbs. per yard, of the latest and most approved patterns of T rail, for sale by
BOORMAN, JOHNSTON & CO.,
119 Greenwich street.

New York, Aug. 26, 1850.

N.B.—B., J. & Co are also prepared to take contracts for English rails, delivered in any of the Atlantic ports of the United States.

Railroad Iron.

THE Undersigned, Agents for Manufacturers, are prepared to contract to deliver Rails of superior quality, and of any size or pattern, to any ports of discharge in the United States.
COLLINS, VOSE & CO.,
74 South St.

New York, June 1, 1850.

Railroad Iron.

1,500 Tons weighing 58 lbs. per lineal yard.
500 " " 57 " "
500 " " 56 " "
500 " " 60 & 61 lbs, "

Also 2½x½ flat rails. All the above being of approved patterns. For sale by
DAVIS, BROOKS, & CO.,
68 Broad street.

N.B.—Rails imported on commission, or at a fixed price.

Iron.

Pig Iron, Anthracite and Charcoal; Boiler and Flue Iron, Spring and Blistered Steel, Nail Rods, Best Refined Bar Iron, Railroad Iron, Car Axles, Nails, Stove Castings, Cast Iron Pipes of all sizes, Railway Chairs of approved patterns' for sale by
COLEMAN, KELTON & CAMBELL,
109 N. Water St., Philadelphia.

Railroad Iron.

THE UNDERSIGNED, HAVING made arrangements abroad, are prepared to contract for the delivery of Foreign rails, of approved brands upon the most favorable terms.

They will also make contracts for American rails, made at their Trenton works, from Andover Iron, in whole or in part, as may be agreed upon.

They are prepared to furnish Telegraph, Spring and Market Wire; Braziers and Wire Rods; Rivets and Merchant Bars to order, all made exclusively from Andover Iron. The attention of parties who require iron of the *very best* quality for special purposes, is respectfully invited. COOPER & HEWITT,
17 Burling Slip, New York.

February 15, 1850.

Glendon Refined Iron.

Round Iron, Band Iron, Hoop Iron,
Square " Flat " Scroll "
Axles, Locomotive Tyres,

Manufactured at the Glendon Mills, East Boston, for sale by GEORGE GARDNER & CO.,
5 Liberty Square, Boston, Mass.

Sept. 15, 1849. 3m37

PATENT HAMMERED RAILROAD, SHIP & BOAT SPIKES.—The Albany Iron Works have always on hand, of their own manufacture, a large assortment of Railroad, Ship and Boat Spikes from 2 to 12 inches in length, and of any form of head. From the excellence of the material always used in their manufacture, and their very general use for railroads and other purposes in this country, the manufacturers have no hesitation in warranting them fully equal to the best spikes in market, both as to quality and appearance. All orders addressed to the subscribers at the works will be promptly executed.
JOHN F. WINSLOW, *Agent.*
Albany Iron and Nail Works, Troy, N. Y.

The above Spikes may be had at factory prices, o Erastus Corning & Co Albany; Merritt & Co., New York; E. Pratt & Brother, Baltimore, Md.

LAP—WELDED
WROUGHT IRON TUBES
FOR
TUBULAR BOILERS,
FROM ONE AND A QUARTER TO SEVEN INCHES IN DIAMETER.

THE ONLY Tubes of the same quality and manufacture as those so extensively used in England, Scotland, France and Germany, for Locomotive, Marine and other Steam Engine Boilers.
THOMAS PROSSER & SON, Patentees,
28 Platt street, New York.

Railroad Iron.

THE UNDERSIGNED ARE PREPARED TO contract for the delivery of English Railroad Iron of favorite brands, during the Spring. They also receive orders for the importation of Pig, Bar, Sheet, etc. Iron. THOMAS B. SANDS & CO.,
73 New street,
February 3, 1849. New York.

Iron Store.

THE Subscribers, having the selling agency of the following named Rolling Mills, viz: Norristown, Rough and Ready, Kensington, Triadelphia, Pottsgrove and Thorndale, can supply Railroad Companies, Merchants and others, at the wholesale mill prices for bars of all sizes, sheets cut to order as large as 58 in. diameter; Railroad Iron, domestic and foreign; Locomotive tire welded to given size; Chairs and Spikes; Iron for shafting, locomotive and general machinery purposes; Cast, Shear, Blister and Spring Steel; Boiler rivets; Copper; Pig iron, etc., etc.
MORRIS, JONES & CO.,
Iron Merchants,
Schuylkill 7th and Market Sts., Philadelphia.

August 16, 1849. 1y33

Railroad Iron.

THE MOUNT SAVAGE IRON WORKS, Alleghany county, Maryland, having recently passed into the hands of new proprietors, are now prepared, with increased facilities, to execute orders for any of the various patterns of Railroad Iron. Communications addressed to either of the subscribers will have prompt attention. J. F. WINSLOW, *President*
Troy, N.Y.
ERASTUS CORNING, Albany.
WARREN DELANO, Jr., N.Y.
JOHN M. FORBES, Boston.
ENOCH PRATT, Baltimore, Md.

November 6, 1848.

Railroad Iron.

THE SUBSCRIBERS ARE PREPARED TO take orders for Railroad Iron to be made at their Phœnix Iron Works, situated on the Schuylkill River, near this city, and at their Safe Harbor Iron Works, situated in Lancaster County, on the Susquehannah river; which two establishments are now turning out upwards of 1800 tons of finished rails per month.

Companies desirous of contracting will be promptly supplied with rails of any required pattern, and of the very best quality.
REEVES, BUCK & CO.
45 North Water St. Philadelphia.

March 15, 1849.

Tredegar Iron Works.

ROLLING MILL FOUNDRY AND MACHINE SHOPS. The undersigned continues to manufacture at his Works in this city (from best charcoal metal) Bar Iron of every description, embracing—Rounds and Squares, from 1¼ to 5 inches diameter. Flats, from ¼ to 7 inches, all thicknesses.

Bands and Scrolls, all sizes. Boiler plate and Plough Iron. Railroad and Locomotive Axles and Tires. Locomotive Frames, Spikes and Plates. Hoops, Ovals, Half Ovals, Half Rounds, Angle, T, L, and indeed every description of Iron usually manufactured, all of which he warrants to be equal to any made in this country. He also manufactures at his Foundry and Machine Shops all descriptions of Railroad Work, say, Locomotives, Railroad Wheels and Axles complete and ready for the road, Railroad Chairs, etc. Also, Marine and Stationary Engines all sizes, Sugar mills and Engines, Horse mills, and every kind of Machinery usually required for the operations of the country. He has paid particular attention to getting up machinery, etc., for Gold Mine operations, and those in want of such work might find it to their advantage to give him a call. J. R. ANDERSON.

Richmond, Va., Sept. 10, 1850.

CUT NAILS OF BEST QUALITY, BAR IRON (including Flat Rails) manufactured and for sale by FISHER, MORGAN & CO.,
75 N. Water St., Philadelphia.

Iron Wire.

REFINED IRON WIRE OF ALL KINDS, Card, Reed, Cotton-flyer, Annealed, Broom, Buckle, and Spring Wire. Also all kinds of Round, Flat or Oval Wire, best adapted to various machine purposes, annealed and tempered, straightened and cut any length, manufactured and sold by ICHABOD WASHBURN.

Worcester, Mass., May 25, 1849.

Wheel, Forge and Foundry Iron.

LOCUST GROVE Wheel Iron of great strength and superior chilling property.

Balt. Charcoal Forge Iron, from Patuxent, Curtis Creek and Gunpowder furnaces.

Elkridge Foundry Iron, of superior strength and softness. Anthracite and Charcoal Iron from Pennsylvania and Virginia. Gas and Water Pipes, Lamp Posts from Elkridge furnace.

LEMMON & GLENN,
6m9 62 Buchanan's Wharf, Baltimore.

S. S. Keyser & Co., IRON WAREHOUSE,

Corner of South and Pratt Streets,
BALTIMORE, MD.

Selling Agents for the Rough and Ready Bar Iron and Elk Boiler and Flue Iron Rolling Mills, Sarah and Taylor Furnaces, and Wrightsville Hollow Ware Foundry, and Dealers in Bar and Sheet Iron, and Cast, Sheer, German, Blister, Spring and Electerised Steel, etc., etc.

Smith & Tyson,

GENERAL COMMISSION MERCHANTS,
No. 25 South Charles St., Baltimore, Md.

AGENTS for the Celebrated Columbia Pig Iron, suitable for Car Wheels and Chilled Rolls.

Columbia refined Charcoal Blooms; Refined Charcoal Juniatta Billet Iron for Wire; Refined Iron for Bridging, of great strength; Cut Nails, Spikes, and Brads; Railroad Spikes and Wrought Chairs. 22tf

---

Stickney & Beatty,

DEALERS IN IRON AND IRON MANUFACTURERS.

AGENTS for the Balt. City Rolling Mill, from which establishment they are prepared to furnish Ellicott's round, square, and flat bar iron, puddled and charcoal boiler plates and billet iron—also agents for the sale of the Laurel and Maryland (Balt.) charcoal forge pig irons, Balt. hard iron for chilling wheels, anti-Eatam nails, Catoctin foundry iron, boiler blooms from the Caledonian works, Wm. Jessop & Son's cast steel, Coleman's blister steel and nail rods, hoop, band, sheet, oval and common English iron.

Nos. 18 and 20 South Charles st., Baltimore.

Railroad Iron.

CONTRACTS made by the subscribers, agents for the manufacturers, for the delivery of Railway Iron, at any port in the United States, at fixed prices, and of quality tried and approved for many years, on the oldest railways in this country.

RAYMOND & FULLERTON, 45 Cliff st.

IRONDALE PIG METAL, MANUFACTURED and for sale by the Bloomsburg Railroad Iron Co.
LINDLEY FISHER, Treasurer.
75 N. Water St., Philadelphia.

Railroad Iron.

2000 Tons, weighing 58 pounds per lineal yard, of the most approved pattern of T rails, in store and to arrive, for sale by
COLLINS, VOSE & CO.,
74 South St.

New York, June 1, 1850.

Railroad Iron.

3,000 TONS C. L. MAKE 63½ lbs. per yard, now landing and to arrive.

Also contracts made for future delivery of above superior make English Iron.

300 Tons Banks Best Iron, Round, Square and Flat.
200 " English Bar " " " "
10 " 9-16 Square Iron for Railroad Spikes.

For sale in lots to suit purchasers by
DAVID W. WETMORE.

New York, March 26, 1850. 3m

WILLIAM JESSOP & SONS' CELEBRATED CAST-STEEL.

The subscribers have on hand, and are constantly receiving from their manufactory,
PARK WORKS, SHEFFIELD,

Double Refined Cast Steel—square, flat and octagon.
Best warranted Cast Steel—square, flat and octagon.
Best double and single Shear Steel—warranted.
Machinery Steel—round.
Best and 2d gy. Sheet Steel—for saws and other purposes.
German Steel—flat and square, "W. I. & S." "Eagle" and "Goat" stamps.
Genuine "Sykes," L Blister Steel.
Best English Blister Steel, etc., etc., etc.

All of which are offered for sale on the most favorable terms by WM. JESSOP & SONS,
91 John street, New York.

Also by their Agents—
Curtus & Hand, 47 Commerce street, Philadelphia.
Alex'r Fullerton & Co., 119 Milk street, Boston.
Stickney & Beatty, South Charles street, Baltimore.
May 6, 1848.

JOHNSON, CAMMELL & Co's Celebrated Cast Steel,

AND

ENGINEERING AND MACHINE FILES,

which for quality and adaptation to mechanical uses, have been proved superior to any in the United States. Every description of square, octagon, flat and round cast steel, sheet, shovel and railway spring steel, best double and single shear steel, German steel, flat and square, goat stamps, etc. Saw and file steel, and steel to order for any purposes, manufactured at their Cyclops Steel Works Sheffield.

JOHNSON, CAMMELL & CO.,
100 William St., New York.

November 23 1849.

Railroad Iron.

THE Undersigned, Agents for Manufacturers, are prepared to contract for the delivery of English, Welsh and Scotch Rails, of any pattern and weight, also for every description of English, Welsh, Scotch, and Swedish Iron, Railway Chairs and Spikes, Rivets, Bolts, Nuts, Washers, Chain Cables, Anchors, Tin Plates, German Spelter, Iron Castings, and every description of Machinery.

WILLIAM BIRD & CO.,
Iron and Tin Plate Merchants,
44 Wall st., New York.
And at 5 Martin's Lane, City, London,
and 140 Buchanan st., Glasgow.

July 27th, 1850.

To the Proprietors of Rolling Mills and Iron Works.

THE Undersigned—Proprietors of Townsend's Furnace and Machine Shop, Albany—are extensively engaged in the manufacture of Machinery and fixtures for Iron, and Copper Rolling Mills, and Iron Works. Having paid particular attention to the manufacture of *Rolls* (Rollers), both *chilled* and *dry-sand*, they feel confident that they can execute orders for such castings in a satisfactory manner. And to give assurance of this, they beg leave to refer to the following named persons, proprietors and managers of some of the most extensive rolling mills in the country, viz: Jno. F. Winslow, J. Tuckerman, H. Burden, W. Burtt, J. & J. Rogers, Saltus & Co., J. B. Bailey, L. G. B. Cannon, Hawkins & Atwater, etc., etc.

F. & T. TOWNSEND.

Albany, August 18, 1849.

Railroad Iron.

B. O. Railway Tires, Railway Wheels,
Scotch Pig Iron, Tin Plates and Banca Tin,
Muntzs Patent Metal Sheathing,
Baltimore Copper.

Contracts for Rails made on behalf of the manufacturers, for delivery at any ports in the United States, at fixed prices.

Bowling Tires and Tire Bars and Scotch Pigs imported to order.

Muntz's Ship-sheathing, and a general stock of Tin Plates and Banca Tin in store, and for sale by
RAYMOND & FULLERTON, 45 Cliff st.

Bowling Iron. Stamped B.O.

Railway Tire Bars	Rivet Iron
Locomotive and other Axles	Locomotive Frame do
Boiler Plates	Bars,

and every other description of this superior Iron.

The subscribers, agents for the sale of Bowling Iron, are prepared to execute orders for importation, especially for railway and machinery uses, with despatch from the manufacturers.

RAYMOND & FULLERTON, 45 Cliff st.

Lovegrove's Patent Cast Iron Water and Gas Pipes.

THE Subscriber, the Inventor and Patentee of the Centrifugal mode of giving form to metallic substances while in a molten state, is preparing to make Cast Iron Water and Gas Pipes, of any dimensions, at prices much lower than they can be made in the old manner, and the pipes warranted to stand a pressure of three hundred pounds to the square inch, and to be soft enough to drill. Steam Engines and all kinds of machinery. Cast Iron Doors and Frames, and Mill Castings of every description, made to order.

THOMAS LOVEGROVE,
Machinist and Founder,
West Falls Avenue, below Pratt st., Baltimore.

Ray's Patent India Rubber Car Springs.

Savannah, Ga., May 22, 1850.

FOWLER M. RAY, Esq.,

Dear Sir: I have no hesitation in saying, after having used on our road your springs and Fuller's, that I consider yours decidedly the best in every particular, and in this opinion I am sustained by all our officers. Fuller's spring has a tendency to split, and also to chafe or abrade by the constant friction on the cast iron plates or disc: and in my opinion is not near so elastic as yours.

Your springs, which have been in use on our road for 12 or 15 months past, and in constant use under both passenger and freight cars, are to all appearances as elastic, sound and good, as when first put in use.

We are now building eigty-five new cars, of which for fifty-sets the springs have been ordered of you.

GEORGE A. ADAMS,
Master Carpenter,
Central Railroad and Banking Co. of Georgia.

—

Connecticut River Railroad Office,
Northampton, May 4, 1850.

E. CRANE, Esq.,

Dear Sir: It is now about two years since I first tried the experiment of using a set of Ray's India-rubber Springs upon one of our merchandise cars, and although the car has been in constant service since that time, I do not on examination find the slightest difference either in the thickness or elasticity of the material.

The same result has followed wherever we have applied them, either for wheel or draw springs on Engines, Tenders or Cars. At present we use no other; either in replacing old springs or building new cars—and I am perfectly satisfied that for economy, durability, safety, and ease of motion, that Ray's India-rubber is the best article for Springs which has been presented to the public.

Yours respectfully, J. HUNT,
Supt. Connecticut River Railroad.

—

EDWARD CRANE, Esq.,

Dear Sir: Having applied to cars of the Boston and Worcester Railroad Corporation, Ray's Vulcanised Rubber Springs (where they have been in use for some two years last past), I have had occasion to observe their operation, and am free to say in answer to your inquiries, that they retain their *elasticity* perfectly during all changes of atmospheric temperature: and are in my opinion a most valuable acquisition to Railroad Cars—are not liable to derangement, as is the case with steel springs; while at the same time it costs less to apply them. Respectfully yours,

D. N. PICKERING,
Supt. Motive Power, Bost. & Wor. Railroad.
Boston, April 15th, 1850.

Monument Foundry.

A. & W. DENMEAD & SON,

Corner of North and Monument Sts.,—Baltimore,

HAVING THEIR

IRON FOUNDRY AND MACHINE SHOP

In complete operation, are prepared to execute faithfully and promptly, orders for

Locomotive or Stationary Steam Engines,
Woolen, Cotton, Flour, Rice, Sugar Grist, or Saw Mills,
Slide, Hand or Chuck Lathes,
Machinery for cutting all kinds of Gearing.
Hydraulic, Tobacco and other Presses,
Car and Locomotive patent Ring Wheels, warranted,
Bridge and Mill Castings of every description,
Gas and Water Pipes of all sizes, warranted,
Railroad Wheels with best faggotted axle, furnished and fitted up for use, complete

☞Being provided with Heavy Lathes for Boring and Turning Screws, Cylinders, etc., we can furnish them of any pitch, length or pattern.

☞ Old Machinery Renewed or Repaired—and Estimates for Work in any part of the United States furnished at short notice.

June 8, 1849.

RAILROAD CAR AND COACH TRIMMINGS.

Doremus & Nixon,

IMPORTERS AND FURNISHERS

HAVE FOR SALE

Plain Garnet Plush.	Fig. Garnet Plush (Butterfly pat.
" Crimson "	" Crimson " (Elegant.
" Scarlet "	" " " (Gen. Taylor.

BROCATELLES.

Crimson Silk Brocatelles. Gold and Maroon do.
Gold and Blue " " Brown "
Silk and Wool " of every color.

MOQUETTS,

Of elegant designs and colors.

GERMAN CLOTH FOR CAR LININGS.

The most beautiful goods ever shown in this country, and the subscribers are the sole agents for the sale of them.

Oil cloths Enamelled with Gold. } These goods can be
" " Silver. } furnished in any
Do. Silver ground velvet printed. } dimensions req'd.

CURLED HAIR

Of every description and quality.

JNO. W. A. STRICKLAND, Agent.
New York, 1850. 1y16

FOWLER M. RAY'S Patent India-rubber Railroad CAR SPRING.

New York and Erie Railroad Shops.
Piermont, March 26, 1850.

This will certify that from practical experience in the use of Fowler M. Ray's India rubber Car Springs, I believe them to be far superior to any others now in use.

I have never known them to be affected by any change of temperature, as other Rubber Springs have been affected on this road.

I am at the present time repairing a Passenger Car that Mr. Ray and myself mounted with his springs about two years and eight months since.

The springs are at the present time as perfect, to all appearances, as when first applied to the car.

Respectfully yours,
HORACE B. GARDNER,
Foreman of the Car Shops.

—

Supt. Office N.Y. & H. R.R.,
New York, March 8, 1850.

This is to certify that we have used the Rubber Springs manufactured by Mr. F. M. Ray for the past twenty months, "both for Passenger and Freight Car Springs and Bumpers, and of different sizes," and have in every case given entire satisfaction, and I consider them the best spring now in use

M. SLOAT, Supt.

—

Boston, March 5, 1850.

In answer to your enquiry about India-rubber Springs, I have to say that we have used them to a considerable extent on both freight and passenger cars, and also on several of our tenders; and I am very well satisfied that they answer all the purposes for which they are intended. I believe the India-rubber will soon supersede all other springs for cars and tenders. Yours truly, S. M. FELTON,
Supt. Fitchburg Railroad.

Office New Jersey Railroad Co.,
Jersey City, March 8, 1850.

FOWLER M. RAY, Esq.,

Dear Sir: In answer to your enquiries respecting the operation of the Vulcanised Rubber Springs, purchased by our company from you some two years since. I reply that they are superior to any spring in use, (that I have either seen or heard of).

The improved form of your spring, consisting of a solid piece of vulcanised rubber with bands on the outside, is far superior to your first form, consisting of disks of rubber with metallic plates interposed.

The last named form was tried, if you recollect, at a much earlier period; and then was replaced by your last form.

I have no hesitation in saying that your springs have given entire satisfaction, and most cheerfully recommend them to railroad companies throughout the country for the following reasons:

1st. The cost is 30 per cent. less.

2d. Saving of weight on each car of 8 wheels from 700 to 800 lbs.

3d. Less care and attention is required, as they are not liable to get out of repair.

4th. A great saving is secured in the wear and tear of the cars and rails from their great elasticity.

5th. The freedom from noise.

6th. There is greater safety in case of accident, as they cannot be broken.

7th. The comfort of passengers is enhanced sufficiently to pay the expense, waiving all the other reasons that I have given.

Should this fail to satisfy any person enquiring, you are at liberty to refer to me, No. 150 Washington St., Jersey City. Yours respectfully,
T. L. SMITH, Supt.

—

New York, March 11, 1850.

I have used the Patent India-rubber Spring purchased of Mr. Ray, upon the cars of the New York and New Haven Railroad, and have found them efficient and economical; and when applied to the axles and draw springs, believe them to be quite equal to any in use. I have found a combination of these springs with a steel spring under the transom beam a very satisfactory arrangement, and am now using this plan in all new cars. Yours respectfully,
ROBERT SCHUYLER.

—

February 25, 1850.

From practical observation of the use of the India-rubber Car Springs, manufactured and sold by your company, we are entirely satisfied in their application, and do not hesitate to recommend them as elastic, durable, requiring no repairs for years, and retaining their consistency during all extremes of weather. We have applied them for the past two years, and consider them superior for all railroad purposes.

Yours truly,
OSGOOD BRADLEY, Car Builder, Worcester.
T. & C. WASON, do. Springfield.
DEAN, PACKARD & MILLS, do. do.
DAVENPORT & BRIDGES, do. Cambridgeport.

—

Office of the New Jersey Railroad Co.,
Jersey City, March 7, 1850.

This is to certify that we have had Mr. F. M. Ray's India-rubber Springs in constant use under our cars, and as Bumper Springs for upwards of two years, and they have in every way given perfect satisfaction.

The present form of spring we deem far superior to the form of Disk, having used both forms, although we have none of those made in Disks at present in use.

We take pleasure in recommending these springs to all railroad companies.

J. P. JACKSON, Vice Prest.
New Jersey Railroad and Trans. Co.

—

Roxbury, February 28, 1850.

In compliance with your request, I take great pleasure in stating the result of my experience in the use of "Ray's Patented Vulcanised India-rubber Car and Engine Springs." We have used them nearly two years, and never had one fail in any way. The *cold weather* does not affect *them*, as it has *other* rubber springs we have used.

With sixteen years' experience as superintendent of machinery on the Boston and Providence railroad, I take pleasure in saying that your springs are the best we ever used, or I ever saw used elsewhere. We have 20 cars rigged with them, of which I can say that the springs are as good now as when first applied. I put 24 lbs. of the rubber under the forward end of one of our heaviest engines, taking off 250 lbs. of steel springs—it has been in use 18 months, and is in as good condition now as when first put under the engine.

Very respectfully yours,
GEO. S. GRIGGS,
Supt. of Machinery, Boston and Prov. R.R.

Fall River, February 2, 1850.

In answer to yours of the 20th ult. I would say that this company has for some 10 or 12 months past been using "Ray's India-rubber Springs." We have applied them to both passenger and freight cars with uniform success. They have invariably preserved their elasticity and consistency through all the extremes of weather; and we are now applying them whenever the steel spring fails. I am well satisfied that they are particularly adapted for railroad purposes.

Very respectfully yours,
GEO. HAVEN,
Supt. Fall River Railroad.

—

Jersey City, March 9, 1850.

This is to certify that the present form of Mr. F. M. Ray's India-rubber Car Spring I consider far superior to the form of Disk, having used both forms.

I take pleasure in recommending these springs to all railroad companies. DAVID H. BAKER,
Foreman of Car Shop of N.J. R.R. & Trans. Co.

—

Harlem R.R. Depot,
New York, March 7, 1850.

This is to certify that we have used Mr. F. M. Ray's India-rubber Springs for over eighteen months, and find them to be easy and durable, and recommend them to railroad companies as being superior to anything we have tried. J. M. SMART,
Foreman at 42d St. Depot.

—

Old Colony Railroad Office,
Boston, March 6, 1850.

EDWARD CRANE, Esq.,
President New England Car Co.,

Dear Sir: In compliance with your request I would state that the Old Colony Railroad Comp'y have had in use upon their road, India-rubber Springs furnished by your company, for more than eighteen months past, during which time they have been extensively used under Passenger and Freight Cars, Locomotive Tenders, and for Drawer and Buffiing Springs, with the most perfect success. The elasticity and consistency of the Rubber has never been unfavorably affected by either extremes of heat or cold—and from the experience which we have had in the use of Rubber Springs, I think them well adapted for railroad purposes—and therefore we have for some months past used Rubber almost exclusively, in all places where springs are required.

Respectfully yours, etc.,
JAS. H. MOORE,
Supt. O. C. Road.

—

Troy, February 27, 1850.

We have been using your India-rubber Car Springs for nearly two years—and we take pleasure in saying that in our opinion the rubber has to a certain extent already, and may eventually entirely supersede all other Springs for Railroad Car purposes. We now use it entirely for Draw Springs and Bumpers, considering it better and lighter than steel.

During our two years' experience in the use of it, we have not known any to lose their elasticity, or fail in any way; and we cheerfully recommend the rubber for railroad car springs. Very respectfully,
EATON, GILBERT & CO.

Passenger Car Linings.

THE Advertiser continues to make to order the Enamelled Car Linings which have been so highly approved the last three years, and are now exclusively used by all the Northern Railroads. No pains are spared to get out new styles, and adapt them to the tastes of every consumer.

Orders addressed to CHARLES STODDER, No. 75 Kilby street, Boston, will have prompt attention.

March 23, 1850. 2m

India-rubber for Railroad Cos.

RUBBER SPRINGS—*Bearing and Buffer—Fuller's Patent—Hose* from 1 to 12 inches diameter. Suction Hose. *Steam Packing*—from 1-16 to 2 in. thick. *Rubber and Gutta Percha Bands.* These articles are all warranted to give satisfaction, made under Tyer & Helm's patent, issued January, 1849.—No lead used in the composition. Will stand much higher heat than that called "Goodyear's," and is in all respects better than any in use. Proprietors of railroads do not be overcharged by pretenders.

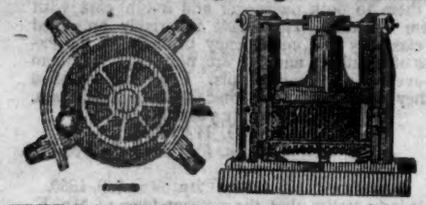
HORACE H. DAY,
Warehouse 23 Courtlandt street.
New York, May 21, 1849.

Spikes, Spikes, Spikes.

ANY person wishing a simple and effective Spike Machine, or a number of them, may be supplied by addressing J. W. FLACK,
March 6, 1850. Troy, N. Y.

MACHINERY.

Henry Burden's Patent Revolving Shingling Machine.



THE Subscriber having recently purchased the right of this machine for the United States, now offers to make transfers of the right to run said machine, or sell to those who may be desirous to purchase the right for one or more of the States.

This machine is now in successful operation in ten or twelve iron works in and about the vicinity of Pittsburgh, also at Phœnixville and Reading, Pa., Covington Iron Works, Md., Troy Rolling Mills, and Troy Iron and Nail Factory, Troy, N. Y., where it has give universal satisfaction.

Its advantages over the ordinary Forge Hammer are numerous: considerable saving in first cost; saving in power; the entire saving of shingler's, or hammerman's wages, as no attendance whatever is necessary, it being entirely self-acting; saving in time from the quantity of work done, as one machine is capable of working the iron from sixty puddling furnaces; saving of waste, as nothing but the scoria is thrown off, and that most effectually; saving of staffs, as none are used or required. The time required to furnish a bloom being only about six seconds, the scoria has no time to set, consequently is got rid of much easier than when allowed to congeal as under the hammer. The iron being discharged from the machine so hot, rolls better and is much easier on the rollers and machinery. The bars roll sounder, and are much better finished. The subscriber feels confident that persons who will examine for themselves the machinery in operation, will find it possesses more advantages than have been enumerated. For further particulars address the subscriber at Troy, N. Y. P. A. BURDEN.

Railroad Spikes and Wrought Iron Fastenings.

THE TROY IRON AND NAIL FACTORY, exclusive owner of all Henry Burden's Patented Machinery *for making Spikes*, have facilities for manufacturing large quantities upon short notice, and of a quality unsurpassed.

Wrought Iron Chairs, Clamps, Keys and Bolts for Railroad fastenings, also made to order. A full assortment of Ship and Boat Spikes always on hand.

All orders addressed to the Agent at the Factory will receive immediate attention.

P. A. BURDEN, *Agent*,
Troy Iron and Nail Factory, Troy, N. Y.

CHILLED RAILROAD WHEELS.—THE UNdersigned are now prepared to manufacture their Improved Corrugated Car Wheels, or Wheels with any form of spokes or discs, by a new process which prevents all strain on the metal, such as is produced in all other chilled wheels, by the manner of casting and cooling. By this new method of manufacture, the hubs of all kinds of wheels may be made whole—that is, without dividing them into sections—thus rendering the expense of banding unnecessary; and the wheels subjected to this process will be much stronger than those of the same size and weight, when made in the ordinary way.

A. WHITNEY & SON,
Willow St., below 13th,
Philadelphia, Pa.

Brown's Old Established SCALE WARE HOUSE,

NO. 234 WATER ST., NEW YORK.

THE Subscriber, Practical Manufacturer of Scales of every description, respectfully asks the attention of Railroad Companies to his Improved Wrought Iron Railroad Track and Depot Scales which for strength, durability, accuracy, convenience in weighing, and beauty of workmanship, are not surpassed by any others in this country.

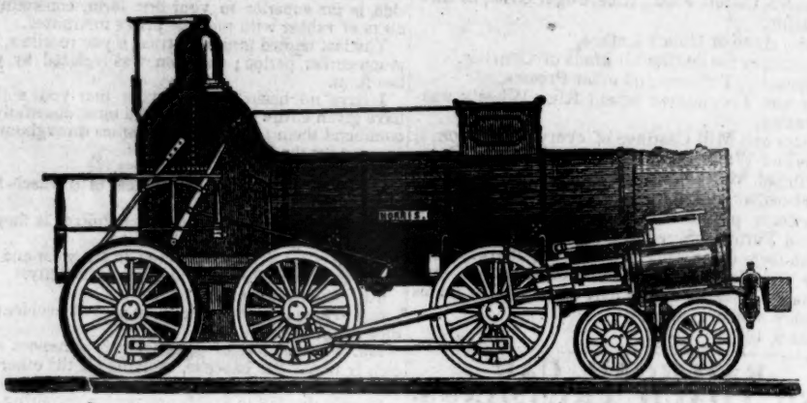
He is aware that this is rather a bold assertion for him to make, yet he can say with confidence that they have but to be tried to give them precedence over all others. J. L. BROWN.

☞ Bank Scales made to order, and all Scales of his make Warranted in every particular.

References given if required

NORRIS' LOCOMOTIVE WORKS.

BUSHHILL, SCHUYLKILL SIXTH-ST., PHILADELPHIA,



THE UNDERSIGNED Manufacture to order Locomotive Steam Engines of any plan or size.

Their shops being enlarged, and their arrangements considerably extended to facilitate the speedy execution of work in this branch, they can offer to Railway Companies unusual advantages for prompt delivery of Machinery of superior workmanship and finish.

Connected with the Locomotive business, they are also prepared to furnish, at short notice, Chilled Wheels for Cars of superior quality.

Wrought Iron Tyres made of any required size—the exact diameter of the Wheel Centre, being given, the Tires are made to fit on same without the necessity of turning out inside.

Iron and Brass castings, Axles, etc., fitted up complete with Trucks or otherwise.

NORRIS, BROTHERS

PATENT MACHINE MADE HORSE-SHOES.

The Troy Iron and Nail Factory have always on hand a general asssortment of Horse Shoes, made from Refined American Iron.

Four sizes being made, it will be well for those ordering to remember that the size of the shoe increases as the numbers—No. 1 being the smallest. P. A. BURDEN, *Agent*,
Troy Iron and Nail Factory, Troy, N. Y.

Etna Safety Fuse.

THIS superior article for igniting the charge in wet or dry blasting, made with DUPONT'S best powder, is kept for sale at the office and depot of

REYNOLDS & BROTHER,
☞ *Sole Manufacturers*, ☜
No. 85 Liberty St.
NEW YORK.

And in the principal cities and towns in the U. States.

☞ The Premium of the AMERICAN INSTITUTE was awarded to the *Etna Safety Fuse* at the late Fair held in this city.

November 3, 1849. 1y

COLUMBUS, OHIO,

Railroad Car Manufactory. RIDGWAYS & KIMBALL,

HAVE established at this central point, the manufacture of Passenger, Freight, Gravel and Hand Cars for Railroads, and assure all Western Railroad Companies that it will be their constant aim to procure the best materials and workmen, and to turn out the best kind of work at fair prices. Specimens may be seen on the Columbus and Xenia Railroad. The patronage of Railroad Companies is respectfully solicited. 1y8

To Inventors and Patentees.

OWEN G WARREN, ARCHITECT, Has had many years' experience as Agent for obtaining Patents, both in this country and Europe, and will transact such business promptly and reasonably. Persons at a distance can have their business done by correspondence—without the necessity of visiting this city or Washington. Office No. 94 Merchants Exchange, Wall st., corner of Hanover st., up stairs. 1y3

MR. HALE:—"The New England Car Co., having been engaged for the last six months in introducing the Vulcanized India-rubber Car Spaings upon the different railroads in this and other states, and having in particular introduced it upon the Boston and Worcester railroad with perfect success, were much gratified to find, by your paper of this morning, that the article had given satisfaction to the president of that corporation, and the terms of just commendation in which you were pleased to speak of it. But their gratification was scarcely equalled by their surprise, when, or arriving at the close of your paragraph, they found the results of all their labors attributed to a foreign source, with which the New England Car Co. has no connection. The material used on the Boston and Worcester railroad, and all the other railroads in this country, where any preparation of India-rubber has been successfully applied, is entirely an American invention, patented in the year 1844 to Charles Goodyear, of New Haven, Conn., and the application of it to this purpose and the form in which it is applied are the invention of F. M. Ray of New York. The only material now in use, and so far as has yet appeared, the only preparation of India rubber capable of answering the purpose, has been furnished under these patents by the New England Car Company, manufactured under the immediate inspection of their own agent. If any other should be produced, the right to use it would depend upon the question of its interference with Mr. Goodyear's patent. The New England Car Company have their place of business in this city at No. 99 State street, and are prepared to answer all orders for the Vulcanised India rubber Car Springs, of the same quality and of the same manufacture as those which they have already placed on your road, and most fo the other roads terminating in this city."

And yet Mr. Knevitt is using these experiments made upon the Springs of the Car Company to induce the public to purchase his springs, and is attempting to impose upon them the belief that the springs used were furnished by him! We ask whether such a course is honorable, or entitles his statements to much consideration from the public.

The above Springs are for sale 98 Broadway, New York, and 99 State street, Boston.

EDWARD CRANE Agent, Boston.
F. M. RAY, Agent, New York.

Boston, May 8, 1849.

STABILITY—SECURITY—PERPETUITY.

Mutual Life Insurance Co. of New York.

No. 35 WALL STREET.

A MILLION OF DOLLARS

Securely invested in Bonds and Mortgages on real estate in this city and Brooklyn, and stocks of the State and City of New York and United States Government.

The company declared a dividend of profits of fifty-two per cent. on all existing policies on the 31st of January, 1848.

All the Profits are Divided Among the Insured.

Persons may effect insurance on their own lives and the lives of others.

A married woman can insure the life of her husband, the benefits of which are secured by law for the exclusive use of herself or children.

Clergymen and all others dependent upon salaries or their daily earnings are specially invited to avail themselves of a resource whereby their surviving families may be secured from the evils of penury.

Pamphlets explanatory of the principles of Mutual Life Insurance, and illustrating its advantages, with forms of application, may be obtained at the office of the company, 35 Wall street, or of any of its agents.

TRUSTEES.

Jos. B. Collins,	Abraham Bininger,
Wm. J. Hyslop.	Alfred Edwards,
R. H. McCurdy,	Wm. Betts,
Fred. S. Winston,	Joseph Blunt,
C. W. Faber,	Isaac G. Pearson,
John P. Yelverton,	Henry Wells,
Theo. Sedgwick,	Wm. Moore,
Stacy B. Collins,	George R. Clark,
John H. Swift,	Jona. Miller,
John Wadsworth,	David A. Comstock,
S. M. Cornell,	Robert Schuyler,
Gouv. M. Wilkins,	James Chambers,
John V. L. Pruyn,	Joseph Tuckerman,
Jas. S. Wadsworth,	Moses H. Grinnell,
Charles Ely,	Wm. J. Banker,
John C. Cruger,	John M. Stuart,
Charles King,	Francis S. Lathrop,
Alfred Pell,	Nathaniel Hayden.

JOSEPH. B. COLLINS, President.
ISAAC ABBATT, Secretary. 3m9

Hydraulic Cement.

KINGSTON LIME AND CEMENT CO.
OFFICE
271 PEARL-ST.
N. Y.

HYDRAULIC CEMENT, OF BEST QUALITY, manufactured at their works, for sale in lots to suit purchasers.

Also, Ground Lime, a superior article for Builders.

ISAAC FRYER, Sec'y.

January 19, 1850. 1v

Engine and Car Works, PORTLAND, MAINE.

THE PORTLAND COMPANY, Incorporated August 8th, 1846, with a capital of $250,000, have erected their extensive Works upon the deep water of Portland Harbor, and receive and transport, to and from their works direct, to and from vessels of any class.

They now manufacture to order, and deliver upon the Railroads running in each direction from the city, or on shipboard as wanted, Locomotive, Stationary, or Steam Boat Engines; Passenger, Mail, Freight, Earth and Hand Cars; Railway Frogs, Switches, Chairs and Castings; and every other description of Machinery.

HORACE FELTON, Superintendent.

JAMES C. CHURCHILL, General Agent and Clerk.

RAILROADS.

EASTERN RAILROAD.

SUMMER ARRANGEMENT.

On and after Monday, June 17th, 1850, trains will leave Boston daily (Sundays excepted);

For Lynn, 7, 9½, 11 a.m., 12 m., 2½, 4½, 5, 6, 7 p.m.
Salem, 7, 9½, 11, a.m., 12 m., 2½, 3, 4½, 6, 7 pm.
Manchester and Gloucester, 9½ a.m., 3, 6 p.m.
Marblehead, 7, 9½, 12 a.m. 2½, 4½, 6, 7 p.m.
Ipswich, 7, 11, 12 a.m., 2½, 4½, 7 p.m.
Newburyport, 7, 11, 12 a.m., 2½ 4½, 7 p.m.
Portsmouth, 7, 11 am., 4½, pm.
Portland, Me., 7, 11 am., 4½, pm.

And for Boston,

From Portland, 5, 10¾ am., 5 pm.
Portsmouth, 7½,* am., 1, 7¼*, pm.
Newburyport, 6½, 8*, 11¼ am., 1¾*, 5, 8 pm.
Ipswich. 7·40, 8·35, 11·42 a.m. 2·20, 5·22, 8¼.
Gloucester, 7½, am., 1¾, 8 pm.
Manchester, 7 am., 2 pm.,
Salem, 6½, 7¼*, 8¼*, 9½, 10½ am., 12¼*, 2½* 3,* 6*, 9*, pm.
Lynn, 6½, 7¾*, 8¼*, 9½, 10½ am., 12½*, 2¾*, 3½ 6¼*, 9¼* pm.

**Or on their arrival from the East.*

Freight trains each way daily. Office 17 Merchants' Row, Boston.

JOHN KINSMAN, Superintendent.

ALBANY AND BUFFALO RAILROADS.—Four Trains daily, Sundays excepted, viz: Leave Albany, 6 a.m., 9 a.m., 2 p.m., 7 p.m. Reach Buffalo, 15 hours, 18 hours, 23 hours, 18 hours. Arrive from Buffalo, 7 p.m., 2½ a.m., 12½ m., 3½ p.m.

Passengers by the *Express Train* reach Buffalo from New York, and New York from Buffalo, in 24 hours. The Isaac Newton and Oregon connect at Albany with this Train. Baggage cars, with careful baggage masters, run through with all the trains.

For Schenectady, Saratoga Springs & Whitehall, Leave Albany at 7 a.m. and 2 p.m. For Schenectady only at 6, 7 and 9 a.m. and 12½, 2 and 7 p.m. For Erie Canal packets at 7 a.m. and 7 p.m. By Plank Road from Schenectady to Saratoga at all hours by stages, etc.

The *Eastern Trains* leave Albany at 7 a.m. and 3 p.m. The wagons of the company take baggage *free* between railroads and steamboats at Albany.

E. FOSTER, Jr., Sec'y
Albany and Schenectady Railroad Co.
Albany, August, 1849.

BOSTON AND MAINE RAILROAD.

Summer Arrangement, 1850.
Outward Trains from Boston

For Portland at 7, 11, am. and 4½ pm
For Great Falls at 7, 11, am., 4½ pm.
For Haverhill at 7, 9, 11 am., 2½, 4½, 6½, pm.
For Lawrence (South Side,) 7, 11 am., 2½, 4½, pm.
" (North ") 7½, 9, a.m 12m., 5, 6½, p.m.
For Reading 7, 9, 11 am. 12m. 2½, 4½, 5, 6½, 7½, 9½ pm.
The Station in Boston is on Haymarket Square.

THOS. S. WILLIAMS, Sup'r.

July 1, 1850.

NEW YORK AND HARLEM RAILROAD.

NEW ARRANGEMENT.

On and after Wednesday, October 17th, 1849, the Cars will run as follows, (Sundays excepted) until further notice:

Trains will leave the City Hall, New York, for—

Harlem and Morrisania at 6½, 8, 10, 11, 12 am., 2, 3½, 4, 5, 6½ pm.
New Village, at 8½, 10, 12 am., 3½, 5, 6½ pm.
Fordham and Williams' Bridge, at 8½, 10, 12 am., 2½ 3½, 5, 6½ pm.
Hunt's Bridge, Underhill's and Hart's Corners, at 8½, 10 am., 3½, 5 pm.
Tuckahoe and White Plains, at 8½, 10 am., 2½, 3½, 5 pm.
Pleasantville, New Castle, Bedford, Mechanicsville, Purdy's, Croton Falls, and intermediate stations, on signal, 8½ am., 2½, 3½ pm.
Brewster's, Towner's, Patterson, Paulding's, South Dover, Dover Furnace, and Dover Plains, 8½ am., 2½ pm.

NOTICE—Passengers are reminded of the great danger of standing upon the platform of the cars, and hereby notified that the practice is contrary to the rules of the Company, and that they do not admit any responsibility for injury sustained by any passenger upon the platforms, in case of accident.

Returning to New York will leave

Harlem and Morrisiana at 6 08, 7½, 8 37, 9, 10 6, 12 am., 1 43, 3 07, 3½, 5, 5 47 pm.
New Village, at 5 58, 8 27, 9 56 am., 1 33, 2 57, 5 36 pm.
Fordham and William's Bridge at 5½, 8 14, 9 43, 10 57 am., 1 20, 2 44, 5 24 pm.
Hunt's Bridge at 8 04, 9 33 am., 2 34, 5 16 pm. On signal.
Underhill's, at 7 56, 9 23 a.m., 2 26, 5 10 p.m. On signal.
Tuckahoe at 7 53, 9 18, 10 40 am., 2 23, 5 08 pm.
Hart's Corners at 7 38, 9 03 am., 2 08, 4 54 pm.—On signal.
White Plains at 7½, 8 55, 10 20 am., 2, 4 47 pm.
Davis' Brook at 8 40, 10 11 am., On signal. 4 39 pm. On signal.
Unionville, 8 27, 10 11 am. On signal. 4 29 pm.—On signal.
Pleasantville at 8 20, 9 56 am., 4 24 pm.
Champaqua, at 8 10, 9 50 am. On signal. 4 18 pm. On signal,
New Castle, at 7 56, 9 38 am., 4 07 pm.
Bedford at 7 46, 9 32 am., 4 02 pm.
Mechanicsville at 7 36, 9 22 am., 3 52 pm.
Golden's Bridge, 7 28, 9 17 am. On signal, 3 47 p m. On signal.
Purdy's at 7 20, 9 09 am., 3 39 pm.
Croton Falls, at 7½, 9 04 am., 3 34 pm.
Brewster's, at 8 50 am., 3 20 pm.
Towner's, at 8 35 am., 3 05 pm.
Paterson, at 8 27 am., 2 57 pm.
Paulding's, at 8 17 am., 2 47 pm.
South Dover, 8 02 am., 2 32 pm.
Dover Furnace, 7 55 am., 2 25 pm.
Dover Plains, at 7 45 am., 2 15 pm.

The trains for Harlem and Morrisiana leaving City Hall at 6½, 8, 10, 11, 12, 2, 4 and 6½, returning from Morrisiana and Harlem at 6 08, 7½, 9, 12, 1 43, 3 07, 3½ and 5 o'clock, will land and receive passengers at 27th 42d, 51st, 61st, 79th, 86th, 109th, 115th, 125th and 132d streets.

The Dover Plains train from New York at 2½ pm., returning leaving Dover Plains at 7½ am., will not stop between White Plains and New York, (except at Tuckahoe, Williams' Bridge and Fordham,) unless to leave passengers coming from above Croton Falls.

A car will precede each train ten minutes to take up passengers in the city. The last car will not stop, except at Broome st. and 27th street.

Freight Trains leave New York at 1 o'clock pm.—Returning, leaves Dover Plains at 12 o'clock m.

For Sunday Aarrangements, see hand bills.

M. SLOAT, Sup't.

NEW YORK & ERIE RAILROAD.

Summer Arrangement, 1850.

Steamboats leave daily, Sundays excepted, from the pier foot Duane st., at 6½ a.m., and 6½ p.m., for Piermont, there connecting with the new and comfortable broad gauge cars of this road, running to Jefferson at the head of Seneca Lake in 12 hours, where passengers take the new and splendid steamer Benj. Loder for Geneva. At Geneva they take any o the trains of the central line for Rochester, Buffalo, and the west.

Breakfast and supper on board the steamboats at each end.

Express freight trains daily over the whole road in 24 hours.

FARES.

Between New York and Buffalo,		$9 85
" "	Geneva,	6 00
" "	(second class,	4 50

CHAS. MINOT, Supt.

August 1st, 1850.

NORTHERN RAILROAD, *NEW YORK.*

CARS run between Rouses Point and Chateaugay daily, Sundays excepted, as follows:

Leave Rouses Point at . . 3½ A.M.
Leave Chateaugay at . . 6½ P.M.

On the arrival of the cars at Chataugay, stages are in readiness to take the passengers to Ogdensburg, where they arrive the same day.

Passengers leave Ogdensburg in the morning by stage, and take the evening train from Chataugay to Rouses Point, where they go immediately on board the steamboats which run north and south on Lake Champlain.

Passengers leaving New York in the evening by the way of Whitehall, will arrive at Rouses Point the next night, and the next morning pass directly from the boat to the cars, and arrive at Ogdensburg the same day. CHARLES L. SCHLATTER, Supt.

WESTERN AND ATLANTIC RAILROAD,

FROM ATLANTA, GA., TO CHATTANOOGA, TENN. 140 Miles.

PASSENGER SCHEDULE.

Leave Chattanooga daily, Sundays excepted, at 8½ a.m.
Arrive at Kingston . . . by 12 m.
" Dalton . . . by 3 p.m.
" Chattanooga . . . by 6 "
Leave Chattanooga daily, Sundays excepted, at 7 a.m.
Arrive at Dalton . . . by 9½ "
" Kingston . . . by 12 m.
" Atlanta . . . by 4 p.m.

The fare is now permanently reduced to *three* cents per mile for way as well as through Passengers; children and servants *two* cents per mile.

There are two Railroad routes from Atlanta to the Seaboard, viz: one by the Georgia Railroad to Augusta, and thence to Charleston by the South Carolina Railroad; the other by the Macon and Western Railroad to Macon, and thence to Savannah by the Central Railroad.

At Kingston, 60 miles north of Atlanta, the Rome Railroad branches off to Rome on the Coosa river, which admits of steamboat navigation as far down as Greensport in Ala. Mail stages are in operation from Rome leading towards Tuscaloosa, Ala., Columbus, Miss., Memphis, Tenn., etc.

At Dalton, 100 miles north of Atlanta, a line of stages branches off to Knoxville, Tenn., which will be superseded by the East Tennessee and Georgia Railroad as rapidly as the same is completed.

At Chattanooga a number of steamboats are in successful operation on the Tennessee river, and from that terminus of the road stages run to Nashville, which will be superseded by the Nashville and Chattanooga Railroad as rapidly as the same is completed.

WM. D. FULLTON, Supt. Transp.
Transportation W. & A. R. R.,
Atlanta, March, 1850.

GREAT NORTHERN & SOUTHERN MAIL ROUTE.

From New York to Charleston, S. C. daily, via *Philadelphia, Baltimore, Washington City, Richmond, Petersburg, Weldon and Wilmington, N. C.*

Travellers by this route, leaving New York at 4½ p. m., Philadelphia at 10 p.m., and Baltimore at 6 a.m., proceed without delay at any point on the route, arriving at Richmond, Va., in a day, and at Charleston, S. C., in two and half days from New York.

Through tickets from New York to Charleston, $20 00
" " Baltimore to Richmond, 7 00
" " " " Petersburg, 7 50

For tickets to Richmond and Petersburg, or further information, apply at the *Southern Ticket Office, adjoining the Washington Railroad Ticket Office, Pratt Street, Baltimore.* STOCKTON & FALLS.

LITTLE MIAMI RAILROAD.—SUMMER ARRANGEMENT.

Cincinnati and Sandusky.

FIRST Passenger Train leaves Depot on East Front street, at 5 o'clock 10 minutes A. M. stops for breakfast at Morrow, and arrives at Springfield at 11 10 A M. Leaves Springfield for Sandusky at 11 50 A. M.

Second Passenger Train leaves Depot 3 P. M. arrives at Springfield at 9 P.M. Passengers take tea at Springfield, and leaves for Sandusky at 9½ P. M.

RETURNING—First Train leaves Springfield at 4 A. M. Stop for breakfast at Xenia, and arrives at Cincinnati at 10 15 A. M.

Second Train leaves Springfield at 2½ P. M. Stop for tea at Morrow, and arrives at cincinnati, at 8½ P. M.

Passengers taking the Morning Train arrive at Sandusky at 9 P. M. Those taking the Afternoon Train arrive at 7½ A. M. next morning, and proceed directly on in the boats.

Passengers for columbus, Zanesville, Wheeling, and intermediate towns, should take the 5, 10 A. M., Train.

The Ohi Stage Company are running the following Lines in connection with the Trains:

A Daily Daylight Line to Columbus from Springfield in connection with the Morning Train from Cincinnati. Also, Daily Lines to Columbus, from Xenia and Springfield, connecting with the 3 o'clock pm. train from Cincinnati.

Fare from Cincinnati to Xenia . .		$1 90
" "	Springfield . .	2 50
" "	Sandusky city .	6 50
" "	Buffalo . .	10 00
" "	Columbus . .	4 50

For other information and through tickets, apply at the Ticket Office on Broadway, near Front-st., Cincinnati.

W. H. CLEMENT, Superintendent.

☞ The Company will not be responsible for Baggage exceeding 50 dollars in value, unless the same is returned to the Conductors or Agent, and freight paid at the rate of a passage for every 500 dollars in value above that amount.

PHILADELPHIA, WILMINGTON, & BALTIMORE RAILROAD.

Summer Arrangement.
April 1st, 1849.—Fare $3.

Leave Philadelphia 8½ am., and 10 pm.
Leave Baltimore 9 am, and 8 pm.
Sunday—Leave Philadelphia at 10 pm.
" Baltimore at 8 pm.
Trains stop at way stations.

Charleston, S. C.

Through tickets Philadelphia to Charleston, $20.

Pittsburg and Wheeling.

Through ticket, Philadelphia to Pittsburg, $12.
" " Wheeling, 13.
Through tickets sold at Philadelphia office only.

Wilmington Accommodation.

Leave Philadelphia at 12 m. 4 and 7 pm.
Leave Wilmington at 7½ am., 4½ and 7 pm.

Newcastle Line.

Leave Philadelphia at 2½ pm.—Baltimore at 1½ pm
Fare $3.—Second class, $2.
N.B.—Extra baggage charged for.

I. R TRIMBLE, Gen. Supt.

BALTIMORE AND SUSQUEHANNA RAILROAD.—Reduction of Fare.

Morning and Afternoon Trains between Baltimore and York.—The Passenger Trains run daily, except Sundays, as follows:

Leave Baltimore at - - -	9 am. and 3½ pm.
Arrive at - - - - -	9 am. and 6½ pm.
Leave York at - - - -	5 am. and 3 pm.
Arrive at - - - - -	12½ pm. & 8 pm.
Leave York for Columbia at	1½ pm. & 8 am.
Leave Columbia for York at	8 am. & 2 pm.

Fare:

Fare to York - - - -	$1 50
" Wrightsville - - - -	2 00
" Columbia - - - -	2 12½

Way points in proportion.

PITTSBURG, GETTYSBURG, AND HARRISBURG.

Through tickets to Pittsburg via stage to Harrisburg - - - - - - $9
Or via Lancaster by railroad - - - 10
Through tickets to Harrisburg or Gettysburg - 3
In connection with the afternoon train at 3½ o'clock, a horse car is run to Green Spring and Owing's Mill, arriving at the Mills at - - 5½ pm.
Returning, leaves Owing's Mills at - - 7 am.

D. C. H. BORDLEY, Sup't.
31 1y Ticket Office, 63 North st.

PHILADELPHIA & READING RAILROAD

Passenger Train Arrangement for 1850.

A Passenger Train will leave Philadelphia and Pottsville daily, except Sundays, at 9 o'clock a.m.

The Train from Philadelphia arrives at Reading at 12 18 m.

The Train from Pottsville arrives at Reading at 10 43 a.m.

Fares.	Miles.	No.1.	No.2.
Between Philad. and Pottsville,	92	$3·50 and	$3·00
" " Reading,	58	2·25	1·90
" Pottsville "	34	1·40	1·20

Five minutes allowed at Reading, and three at other way stations.

Passenger Depot in Philadelphia corner of Broad and Vine streets. 8tf.

BALTIMORE AND OHIO RAILROAD AND WASHINGTON BRANCH.

On and after January 1, 1850, Passenger Trains will run as follows:

Leave Baltimore for Ellicott's Mills, Frederick, Harper's Ferry, Martinsburg, Hancock and Cumberland, every morning at 7½ o'clock. This line carries the Great Mail, and connects with Post Coaches at Cumberland, for Wheeling and Pittsburg, over the National Road. Also with the Winchester Trains, at Harper's Ferry. N.B.—Passengers for Pittsburg take the steamers of the Monongahela slack water navigation at *Brownsville*, only 76 miles from Cumberland.

Leave Baltimore for Ellicott's Mills, Frederick and Harper's Ferry, daily, except Sunday, at 4½ p.m.

Leave Baltimore for Washington City, daily, at 6 a.m. and 5 p.m.—daily, except Sunday, at 9 a.m. The early train connects with the Great Southern Line, via Fredericksburg and Richmond, to Charleston.

Leave Cumberland for Baltimore, etc., at 8½ a. m., daily, connecting with the train from Winchester at Harper's Ferry—with the Evening Train to Washington City, at the Relay House—and with the Evening Train to Philadelphia, at Baltimore. Time for arriving at Baltimore, 5½ p.m.

Leave Harper's Ferry for Baltimore, daily, except Sunday, at 7½ a. m—taking in Passengers who leave Frederick at 8½ a.m.

Leave Washington for Baltimore, daily, at 6 a.m. & 5½ p.m., and *daily, except Sunday*, at 9½ a. m. The early train connects at the Relay House with the morning line to Cumberland and the West, and at Baltimore with the day line to Philadelphia and New York.

Through tickets are sold at *Philadelphia and Baltimore* for Pittsburgh and Wheeling, and at *Philadelphia and New York* for Charleston, S. C., at the following

RATES OF FARE.

	To Pittsburg.		Wheeling.		Charleston.
	In winter.	Summer.	Win.	Sum.	
From Philadelphia,	$13	$12	$14	$13	$20
" Baltimore,	11	10	12	11	
" New York, ...					20

Passengers leaving New York not later than the afternoon line via Newark, etc., reach Baltimore in season to take the next morning's lines to the South and West.

Passengers leaving Cumberland in the morning and Washington in the evening lines, reach Baltimore in season to proceed to Philadelphia by the evening train at 8 p. m.—so as to reach New York before noon the next day.

An Emigrant line by burthen cars, leaves Baltimore every morning, except Sundays, at 4 o'clock—connecting with a line of the previous day from N. York—and at Cumberland with a wagon line to Pittsburg or Brownsville and Wheeling. Fare by this line:

From New York to Pittsburg,	$8 00
" Philadelphia "	6 50
" Baltimore "	5 00

By order, J. T. ENGLAND, Agent.

SOUTH CAROLINA RAILROAD.—A PASSENGER

Train runs daily from Charleston, on the arrival of the boats from Wilmington, N. C., in connection with trains on the Georgia, and Western and Atlantic Railroads—and by stage lines and steamers connects with the Montgomery and West Point, and the Tuscumbia Railroad in N. Alabama.

Fare through from Charleston to Montgomery daily - - - - - - $26 50
Fare through from Charleston to Huntsville, Decatur and Tuscumbia - - - 22 00

The South Carolina Railroad Co. engage to receive merchandize consigned to their order, and to forward the same to any point on their road; and to the different stations on the Georgia and Western and Atlantic Railroad; and to Montgomery, Ala., by the West Point and Montgomery Railroad.

JOHN KING, Jr., Agent.

FAIRBANKS' RAILROAD SCALES.—THE subscribers are prepared to construct at short notice, *Railroad* and *Depot Scales*, of any desired length and capacity. Their long experience as manufacturers—their improvements in the construction of the various modifications, having reference to strength, durability, retention of adjustment, accuracy of weight and dispatch in weighing—and the long and severe tests to which their scales have been subjected—combine to ensure for these scales the universal confidence of the public.

No other scales are so extensively used upon railroads, either in the United States or Great Britain;—and the managers refer with confidence to the following in the United States.

Eastern Railroad.	Boston & Maine Railroad.
Providence Railroad.	Providence and Wor. Road.
Western Railroad.	Concord Railroad.
Old Colony Railroad.	Fitchburg Railroad.
Schenectady Railroad.	Syracuse and Utica Road.
Balt. and Ohio Railroad.	Baltimore and Susq. Road.
Phila. & Reading Road.	Schuylkill Valley Road.
Central (Ga.) Railroad.	Macon and Western Road.

New York and Erie Railroad.

And other principal Railroads in the Western, Middle and Southern States.

E. & T. FAIRBANKS & CO.
St. Johnsbury, Vt.

Agents, { FAIRBANKS & Co., 89 Water St., N. York. / A. B. NORRIS, 196 Market St. Philadelphia.

April 22, 1849. 1y*17

NOTICE TO
Superintendents of Railroads.

TYLER'S PATENT SAFETY SWITCH.—The undersigned would respectfully call their attention to his Patent Safety Switch, which from long trial and late severe tests has proved itself perfectly reliable for the purpose for which it was intended. It is designed to prevent the train from running off when the switch is set to the wrong track by design or accident. The single rail or gate switch is established as the best and safest switch for the ordinary purpose of shifting cars from one track to another, but it is liable to the serious evil of having one track open or broken when connected with the other. My improvement entirely removes this evil, and while it accomplishes this important office, leaves the switch in its original simplicity and perfection of a plain unbroken rail, connecting one track with the other ready for use.

The following decision of the Commissioner of Patents is respectfully submitted to Railroad Engineers, Superintendents, and all others interested in the subject.

P. B. TYLER.

(COPY.)

UNITED STATES PATENT OFFICE,
Washington City, D.C., April 28th, 1846.

SIR: You are hereby informed that in the case of the interference between your claims and those of Gustavus A. Nicolls, for improvements in safety switches—upon which a hearing was appointed to take place on the 3d Monday in March, 1846, the question of priority of invention has been decided in your favor. Inclosed is a copy of the decision. The testimony in the case is now open to the inspection of those concerned.

Yours respectfully, EDMUND BURKE,
Commissioner of Patents.

To Philos B. Tyler.

Any further information may be obtained by addressing P. B. TYLER, Springfield, Mass., or JOHN PENDLETON, Agent, 149 Hudson St., New York.

NORRIS' LOCOMOTIVE WORKS,
SCHENECTADY, N. Y.

THESE Works are in full operation in Manufacturing to order, Locomotive Steam Engines & Tenders, of the best principle and construction of material, using wrought iron heavy frames with pedestals welded thereto, and all parts of the engine made of the best wrought iron, except cylinders, pumps and boxes—obtaining greater durability, and carrying less weight over the road, than engines constructed of cast iron.

Wrought Iron Tires made any required size, and Tire Bars bent and welded with dispatch.

Chilled Wheels for Cars, Tucks and Tenders, made from the toughest iron.

Driving and Tender and Car Wheels fitted to Axles with Brass Boxes and Springs, and Railroad Machinery generally. Manufactured and for sale by

April 11, 1849. E. S. NORRIS.

CORROSIVE SUBLIMATE.

THIS article now extensively used for the preservation of timber, is manufactured and for sale by POWERS & WEIGHTMAN, manufacturing Chemists, Philadelphia.

Jan. 20, 1849.

CENTRAL RAILROAD FROM SAVANNAH TO MACON, (Ga.) 190¼ miles.

Passenger Trains leave Savannah and Macon daily at 7 a.m.
Passenger trains arrive daily at Savannah, 6 15 p.m.
" " " " Macon, 6 45 p.m.

This road, in connection with the Macon and Western road from Macon to Atlanta, and the Western and Atlantic road from Atlanta to Dalton, now forms a continuous line of 391¼ miles in length* from Savannah to Dalton, Murray county, Ga. and with the Memphis Branch railroad, and Stages connect with the following places:

Tickets from Savannah to	Macon,	$5 75
" " "	Atlanta,	9 50
" " "	Augusta,	6 50
" " "	Columbus,	15 00
" " "	Opelika,†	17 00
" " "	Jacksonville, Ala.,	20 00
" " "	Talladega, Huntsville Ala., Decatur,	22 00
" " "	Tuscumbia, Ala.,	22 50
" " "	Tuscaloosa, Ala.,	
" " "	Columbus, Miss, Aberdeen, " Holly Springs	28 00
" " "	Nashville, Tenn. Murphreesboro'	25 00
" " "	Columbia, do.,	
" " "	Memphis, do.,	30 00

An extra Passenger Train leaves Savannah on Saturdays, after the arrival of the Steam-ships from New York, for Macon, and connects with the Macon and Western railroad; and on Tuesdays, after the arrival of the Macon and Western cars, an extra Passenger Train leaves Macon to connect with the Steam ships for New York.

Stages for Tallahasse and intermediate places connect with the road at Macon, Mondays, Wednesdays, and Fridays, and with Milledgeville at Gordon daily.

Passengers for Montgomery, Mobile and New Orleans take stage for Opelika from Barnesville through Columbus, a distance of 97 miles, or from Griffin thro' West Point, a distance ot 93 miles.

* The Western and Atlantic railroad will soon be completed between Dalton and Chattanooga, a distance of 423¼ miles from Savannah, of which due notice will be given.

† Head of the West Point and Montgomery railroad, on which the fare to Montgomery is about $2.

RATES OF FREIGHT FOR MERCHANDIZE GENERALLY, FROM SAVANNAH TO MACON.

Measurement Goods.—Boxes of hats, bonnets, furniture, shoes, saddlery, dry-goods, and other measurement goods, per cubic foot - -	13 cents.
Crockery Ware, in crates, boxes or hhds, per cubic foot. - - - -	10 "
Goods by Weight, 1st class.—Boxes of glass, paints, drugs & confectionary, per 100 lbs.,	50 "
2d class—Sugar, coffee, rope, butter, cheese, lard, tobacco, leather, hides, copper, sheet and hoop iron, tin, hard and hollow ware, rice, boxes soap and candles, bagging, and other heavy articles not enumerated below, per 100 lbs., - - - - -	45 "
3d class—Flour, bacon, liquors, pork, beef, fish, tallow and beeswax, per 100 lbs.,	40 "
4th class—Mill-gearing, pig and bar iron, grind and millstones, nails, spikes and coal, 100 lb.	30 "
Barrels of beets, bread, crackers, potatoes, ice, fruit, oysters, onions, and all light bbls, each,	75 "
Oil and molasses per hhd., (smaller casks in proportion) - - -	$6 00 "
Salt per sack not exceeding 4 bushels, -	50 "

☞ Goods consigned to Thos. S. Wayne, Forwarding Agent, Savannah, will be forwarded free of commission.

WM. M. WADLEY, Supt.

Savannah, Ga., February 24, 1850.

ENGINEERS' AND SURVEYERS'
INSTRUMENTS MADE BY
EDMUND DRAPER,
Surviving partner of
STANCLIFFE & DRAPER.

No 23 Pear street, near Third, below Walnut, Philadelphia.

GEORGIA RAILROAD. FROM AUGUSTA TO ATLANTA—171 MILES.

AND WESTERN AND ATLANTIC RAILROAD, FROM ATLANTA TO DALTON, 100 MILES.

This Road, in connection with the South Carolina Railroad, and Western and Atlantic Railroad, now forms a continuous line, 408 miles in length, from Charleston to Dalton Cross Plains) in Murray county, Ga. 32 miles from Chattanooga, Tenn.

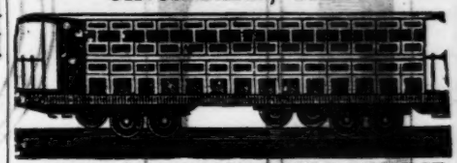
RATES OF FREIGHT.		Between Augusta and Dalton. 271 miles.	Between Charleston, and Dalton. 408 miles.
1st class	Boxes of Hats, Bonnets, and Furniture, per cubic foot - -	$0 18	$0 28
2d class	Boxes and Bales of Dry Goods, Saddlery, Glass, Paints, Drugs, and Confectionary, per 100 lbs.	1 00	1 50
3d class	Sugar, Coffee, Liquor, Bagging, Rope, Cotton, Yarns Tobacco, Leather, Hides, Copper, Tin, Feathers, Sheet Iron, Hollow ware, Castings, Crockery, etc.	0 60	0 85
4th class	Flour Rice, Bacon, Pork, Beef, Fish, Lard, Tallow, Beeswax, Bar Iron, Ginseng, Mill Gearing, Pig Iron, and Grindstones, etc. - - -	0 40	0 65
	Cotton, per 100 lbs. -	0 45	0 70
	Molasses per hogshead -	8 50	13 50
	" " barrel - -	2 50	4 25
	Salt per bushel - -	0 18	
	Salt per Liverpool sack -	0 65	
	Ploughs, Corn Shellers, Cultivators, Straw Cutters, Wheelbarrows - -	0 75	1 50

German or other emigrants, in lots of 20 or more, will be carried over the above roads at 2 cents per mile.

Goods consigned to S. C. Railroad Company will be forwarded free of commissions. Freights payable at Dalton.

F. C. ARMS,
44*1y Sup't of Transportation.

CAR MANUFACTORY
CINCINNATI, OHIO.



KECK & DAVENPORT WOULD RESPECTfully call the attention of Railroad Companies in the West and South to their establishment at Cincinnati. Their facilities for manufacturing are extensive, and the means of transportation to different points speedy and economical. They are prepared to execute to order, on short notice, Eight-Wheeled Passenger Cars of the most superior description. Open and Covered Freight Cars, Four or Eight-Wheel Crank and Lever Hand Cars, Trucks, Wheels and Axles, and Railroad Work generally.

Cincinnati, Ohio, Oct. 2, 1848. 44tf

NICOLL'S PATENT SAFETY SWITCH FOR Railroad Turnouts. This invention for some time in successful operation on one of the principal railroads in the country, effectually prevents engines and their trains from running off the track at a switch, left wrong by accident or design. It acts independently of the main track rails; being laid down or removed without cutting or displacing them.

It is never touched by passing trains, except when in use, preventing their running off the track. It is simple in its construction and operation, requiring only two castings and two rails; the latter, even if much worn or used, not objectionable.

Working models of the Safety Switch may be seen at Messrs. Davenport, Bridges & Kirk's Cambridge Port, Mass., and at the office of the Railroad Journal, New York.

Plans, Specifications, and all information obtained, on application to the Subscriber, Inventor and Patentee.

G. A. NICOLLS,
Reading, Pa.

FOWLER M. RAY'S
METALLIC INDIA RUBBER CAR SPRINGS.

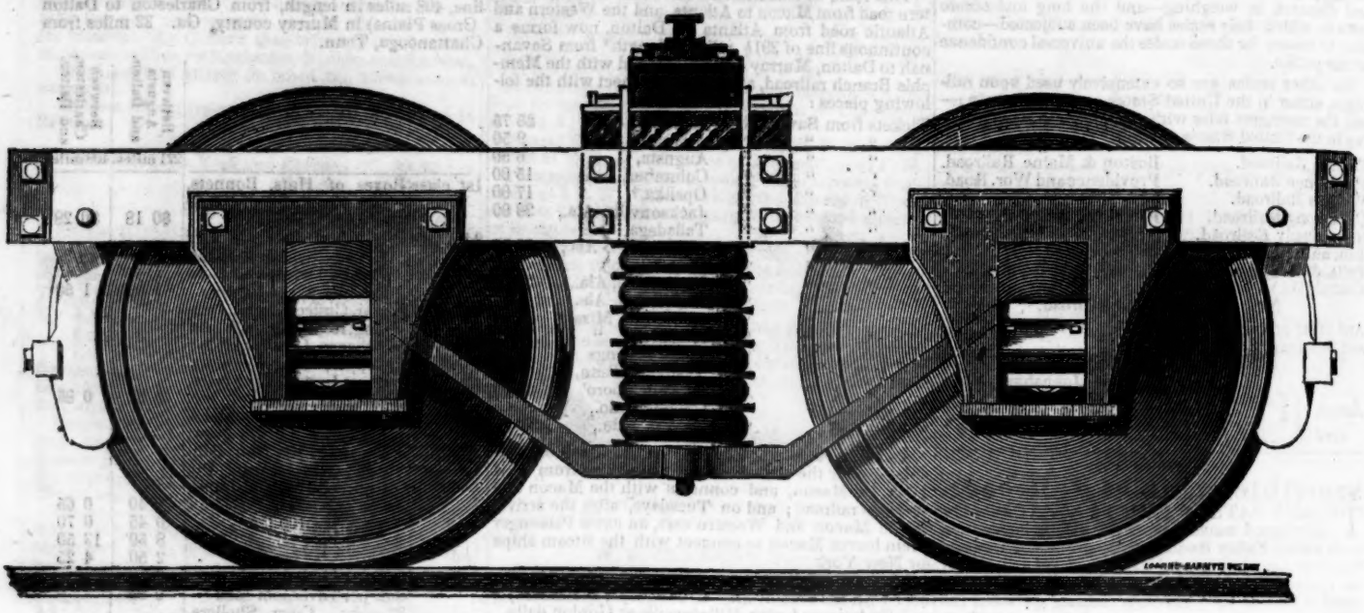


Fig. 1.

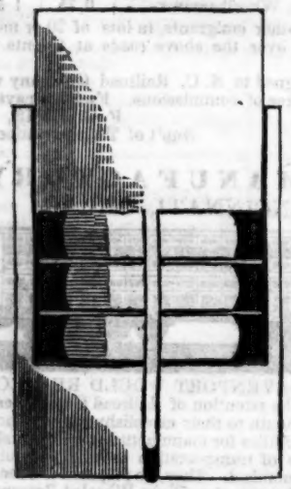


Fig. 2.

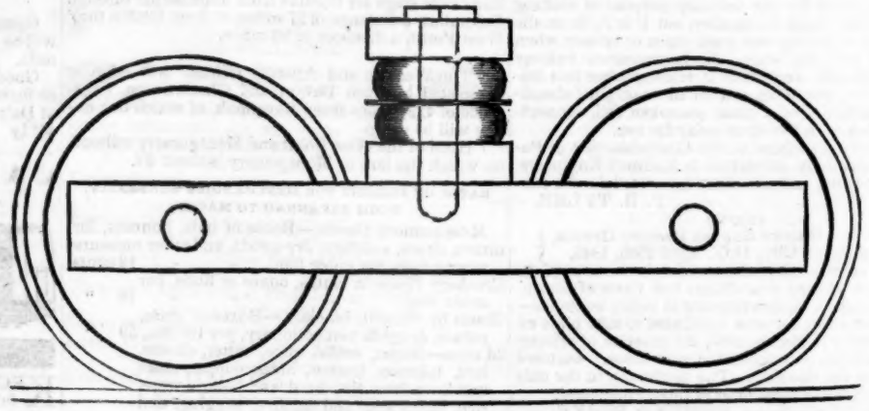
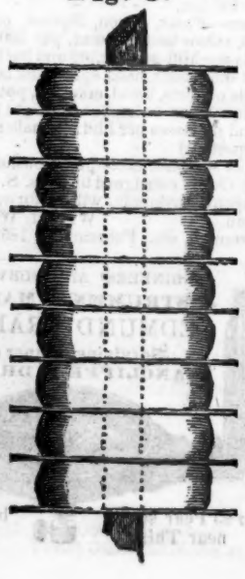


Fig. 3.



So much has been published for the purpose of misleading the public in regard to the inventorship of the India-rubber Railroad Spring, patented in the United States by Mr. W. C. Fuller, that the New England Car Company, proprietors of this invention, have deemed it proper, for the information of Railroad Companies, Car Builders and the public generally, to lay before them the facts upon which they found their claim to this invention, and to a Patent therefor.

Cut No. 1, Represents a cross section of the first model made by Mr. Tucker, under the direction of Mr. Ray, in the summer of 1844, and to which Mr. Tucker, Mr. Bradley and Mr. Bannester testify as being the model marked "B."

Cut No. 2, Represents the model made in 1845, to which Mr. Osgood Bradley and Gen. Thos. W. Harvey have testified.

Cut No. 3, Represents a rough sketch made by Mr. Ray in 1844, which he gave to a man about departing for England to take out some patents, who promised to write to Ray after his arrival in that country—which promise he has probably forgotten.

Mr. W. C. Fuller, of England, patented the above Spring in that country on the 23d October, 1845. He filed his enrollment April 23d, 1846, and on the 22d October, 1846, he took out a patent in the United States under the title, "For Improvement in Railway Carriages," when the improvement consisted in the spring, and not in the carriage.

The reader will perceive by the annexed testimony, that the India-rubber Railroad Car Spring was invented by Mr. Ray about two years previous to the date of Mr. Fuller's enrollment.

The Depositions are omitted for want of room, but will be published in full in the course of a few weeks.

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